Highway 413 Transportation Corridor Route Planning, Preliminary Design and EA Study – Stage 2

City of Markham Development Services Committee

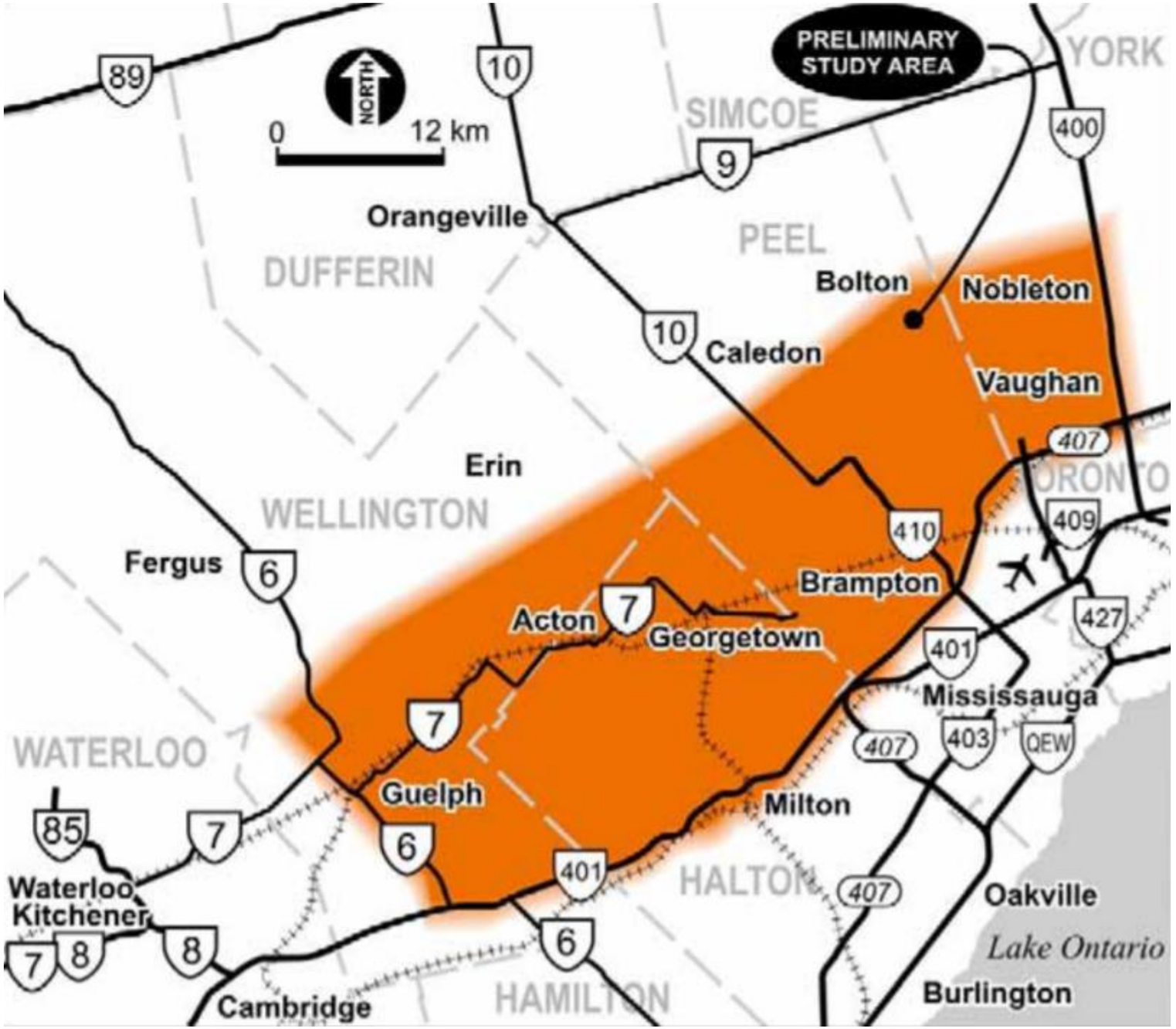
November 22, 2021

Agenda

- Overview of the Highway 413 Project
- Preferred Route and 2020 Focused Analysis Area (FAA)
- Preliminary Design Activities
- Consultation and Engagement
- Next Steps
- Open Discussion

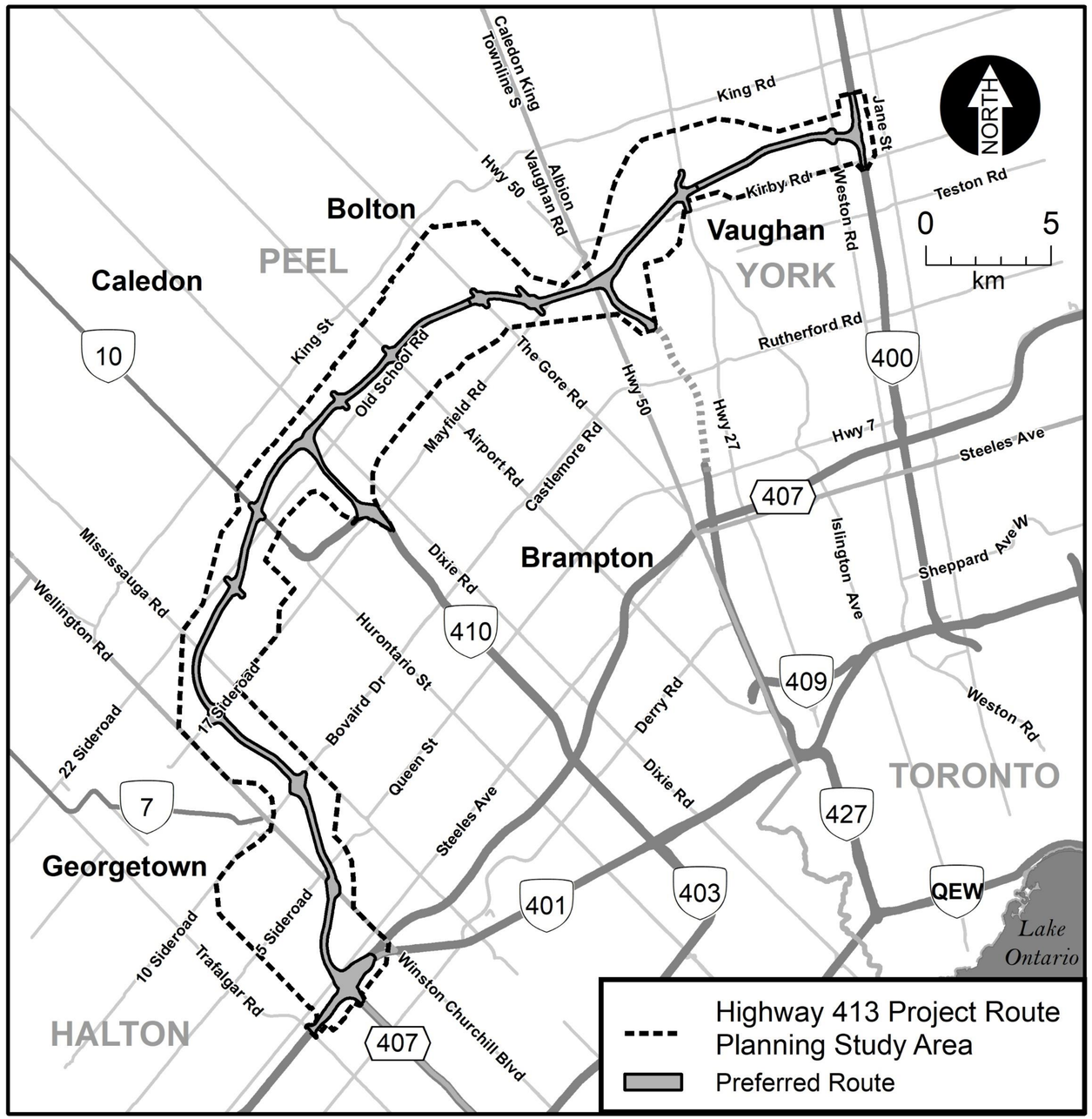
Study Overview

- Stage 1 (2008 – 2012) focused on long-term transportation problems and opportunities:
  - Optimizing the existing transportation and transit network and significantly investing in transit would not be enough.
  - Highway 413 is still required.



Study Overview

- Stage 2 focuses on a new highway and transitway:
  - Extending from Highway 401/407 ETR interchange areas in the west to Highway 400 in the east.
  - Includes a 400-series highway and transitway, potential goods movement priority features, and other potential features like electric vehicle charging stations at carpool lots.

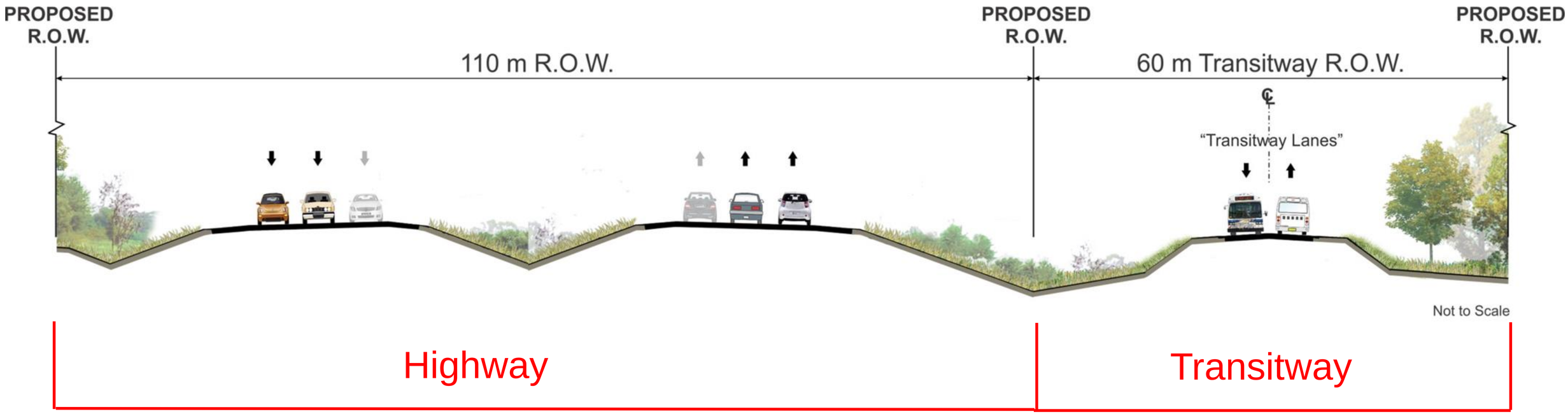


Planning *With* Vision, Planning *For* People

- The need for Highway 413 remains and is strengthened by the GGH population and employment growth forecasts, reflecting more people and jobs by 2041 and beyond. By 2051, the population of the GGH is expected to grow to almost 15 million people, with employment growing to approximately 7 million jobs.
- Congestion already costs the GTA $11 billion per year in lost productivity. Ontario needs new infrastructure to help move people and goods or the region will quickly become overwhelmed.
- Demand forecasting in Stage 1 EA included aggressive assumptions for transit expansion, including the entire Metrolinx Big Move transit plan identified in the MoveOntario 2020.
- Modelling and projected traffic demand forecasts showed that Highway 413 would have 300,000 vehicle trips per day by 2031.
  - Highway 413 would save the people who use it up to 30 minutes each way.
- There will be a significant increase in highway usage (including 407ETR) in the next few decades given the expected population growth in the GGH. By 2031, the 407ETR is expected to experience major congestion between Highways 400 and 427, and moderate congestion between Highways 427 and 401.

Federal Impact Assessment (IA)

- On May 3, 2021, the Federal Minister of Environment and Climate Change designated the Highway 413 Project under the Federal Impact Assessment Act (IAA).
  - We have started to develop an Initial Project Description (IPD).
  - We are consulting with the public, municipal staff and Councils, interested Indigenous communities.
  - Once submitted, the Agency will consult with the Indigenous communities and other stakeholders and prepare a Summary of Issues.
  - We will then prepare a Detailed Project Description (DPD).
  - After the DPD is submitted, the Agency must provide a decision regarding whether a Federal Impact Assessment is required.
- A designation of the Highway 413 Project for a Federal IA does not replace the provincial Environmental Assessment (EA) process underway.
  - We will continue with our planned public and Indigenous community consultations and engagements.



- 4 - to 6-lane highway with a separate adjacent transitway.
- Proposed right-of-way will be 170m (highway = 110m, transitway = 60m).
- The transitway will:
  - Allow buses (and potentially in the future, light rail vehicles) to operate on express schedules.
  - Include stations at strategic locations and provide transit connections with buses onto major arterial roadways, Highway 401, 407ETR, Highway 410, Highway 427, and Highway 400.

Potential Goods Movement Priority Features

Truck Only Lanes

freightwaves.com

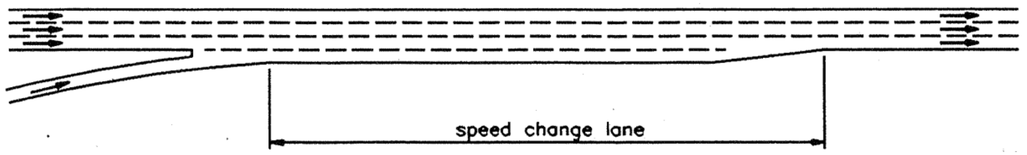
Intelligent Transportation Systems Features (variable message signs, real time traveler information)

Truck Parking Facilities

hornlogistic.com

Enhanced Design to Accommodate Long Combination Vehicles

semanticscholar.org



Longer Speed Change Lanes

Enforcement Features (weight and inspection stations)

bristoltruckrentals.com

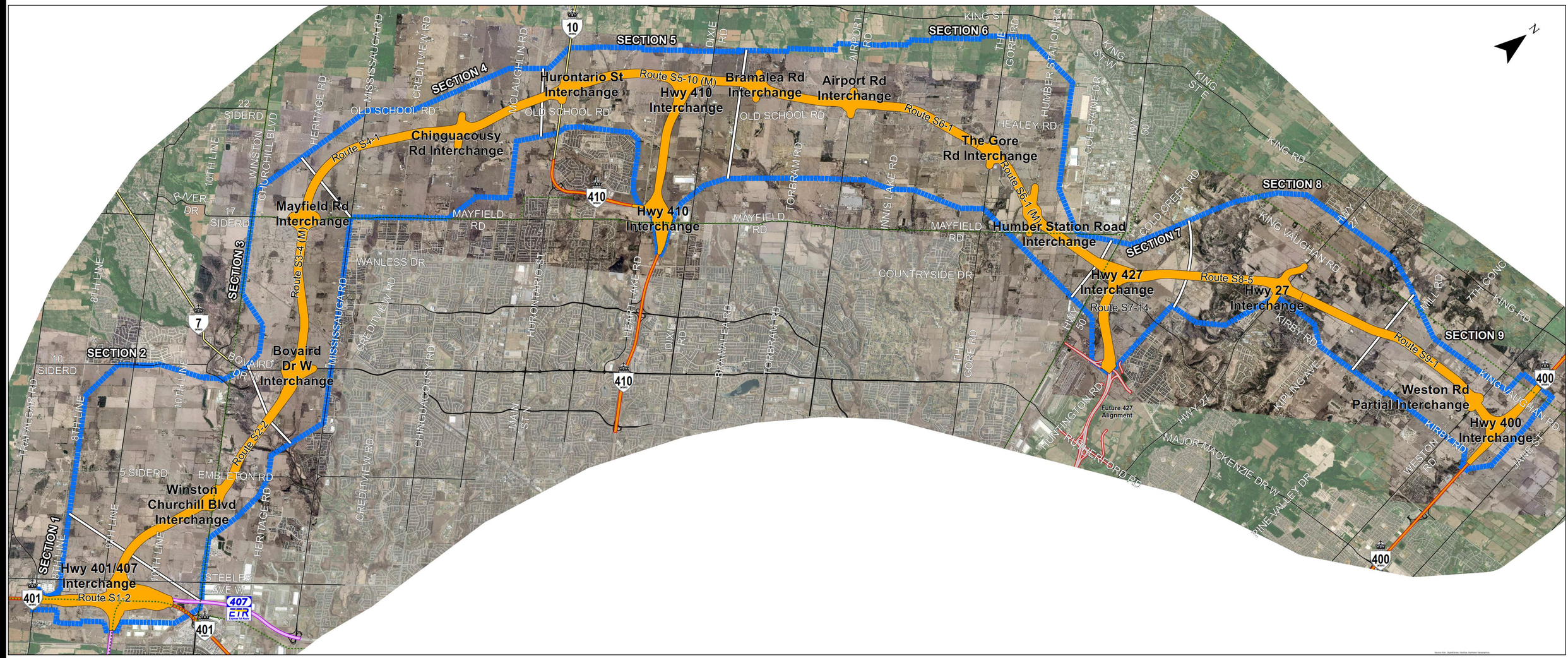
Ontario WSP AECOM

Future-Ready

- Ontario is a leader in the connected and automated/autonomous vehicle technology space.
- Highway 413 is future-ready by supporting infrastructure for a connected corridor:
  - Vehicle to Infrastructure (V2I) shares information in two directions.
  - Provisions for Road Side Units (RSUs) that provide the connectivity and sharing of the Basic Safety Message.
- Movement of goods through truck platooning is being considered.

CAV Readiness Plan, March 2020

Preferred Route

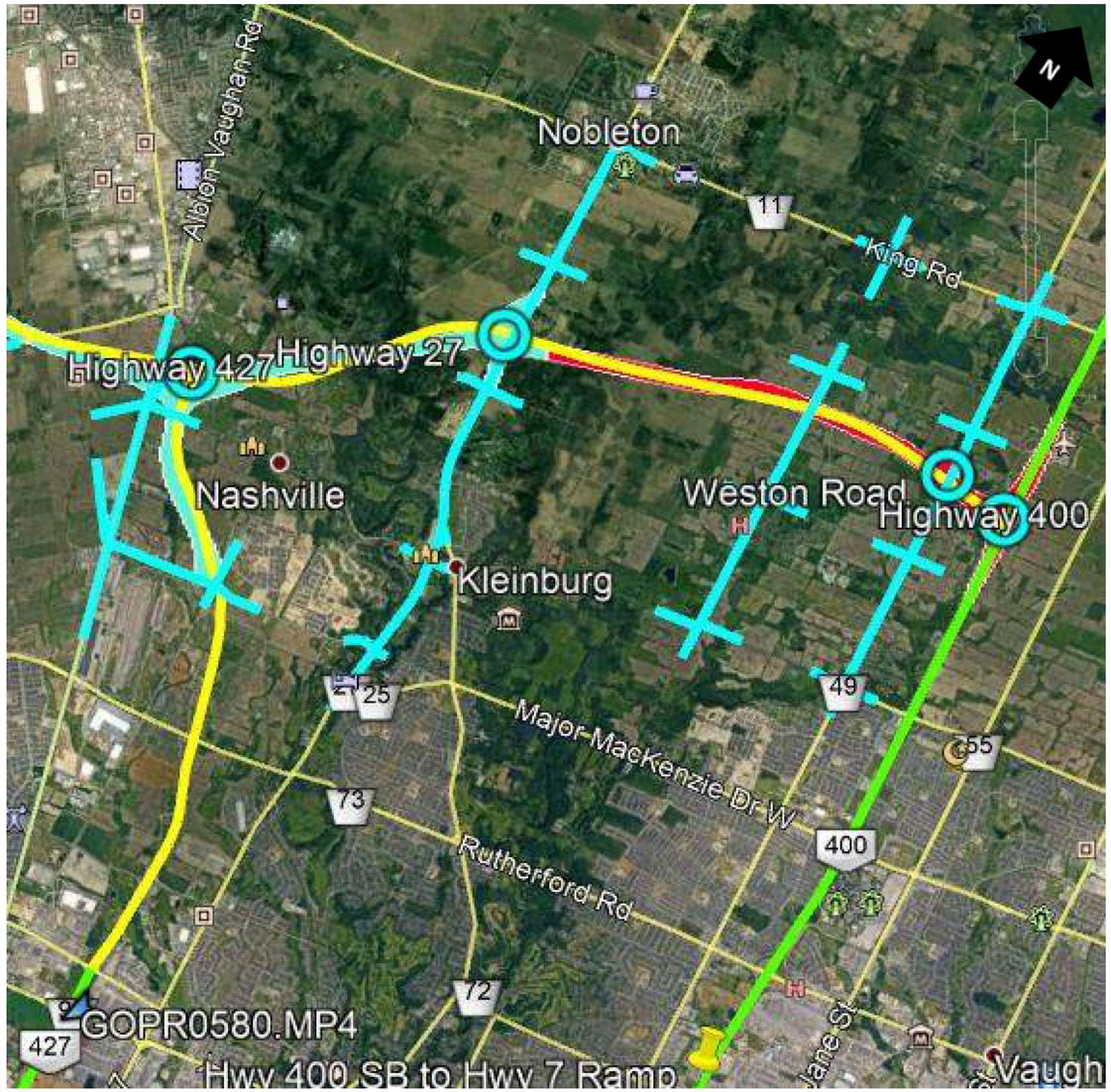


Route Planning Study Area

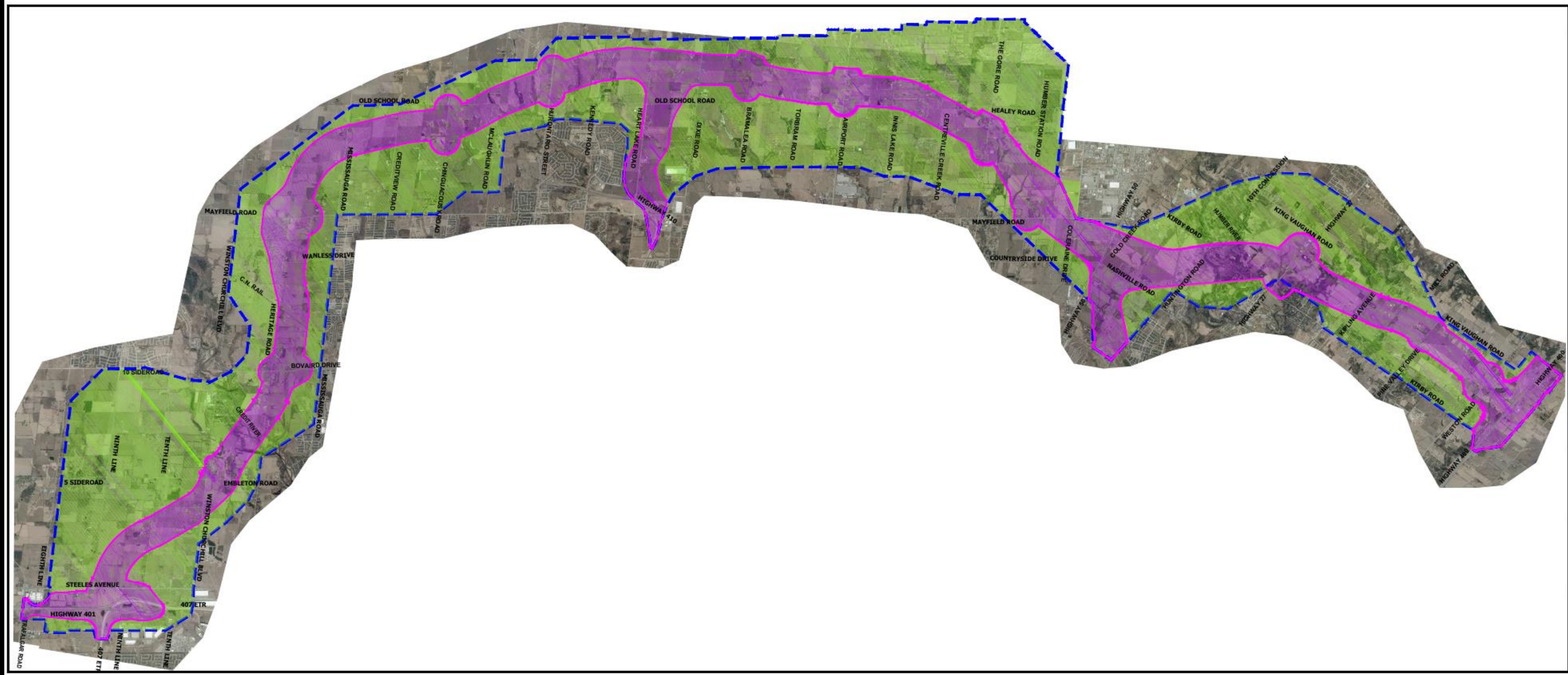
Preferred Route and Interchange Locations

Traffic Engineering – Micro and Macro Modelling

- Base year model calibration completed.
- Future networks input requested.
- Initiated modelling of future scenarios (2031 and 2041 horizons).
- Networks:
  - Existing conditions: MTO GGHMV4.
  - Future networks: MTO GGHMV4, with updates based on municipal plans.
- Land use:
  - Existing conditions: 2016 Census.
  - 2031 Future conditions: Based on inputs from Region/Municipalities.
  - 2041 Future conditions: MTO GGHMV4.
- Microsimulation network includes connections to freeway and crossing roads with interchanges extended to next 1 or 2 intersections, as applicable.



2020 Focused Analysis Area (FAA)



- **Purple Area** is the 2020 FAA. Properties located in this area could be directly impacted by the multimodal transportation corridor, ancillary uses, or if refinements are made to the route during preliminary design.
- MTO has reduced interest in properties in the **Green Areas.**

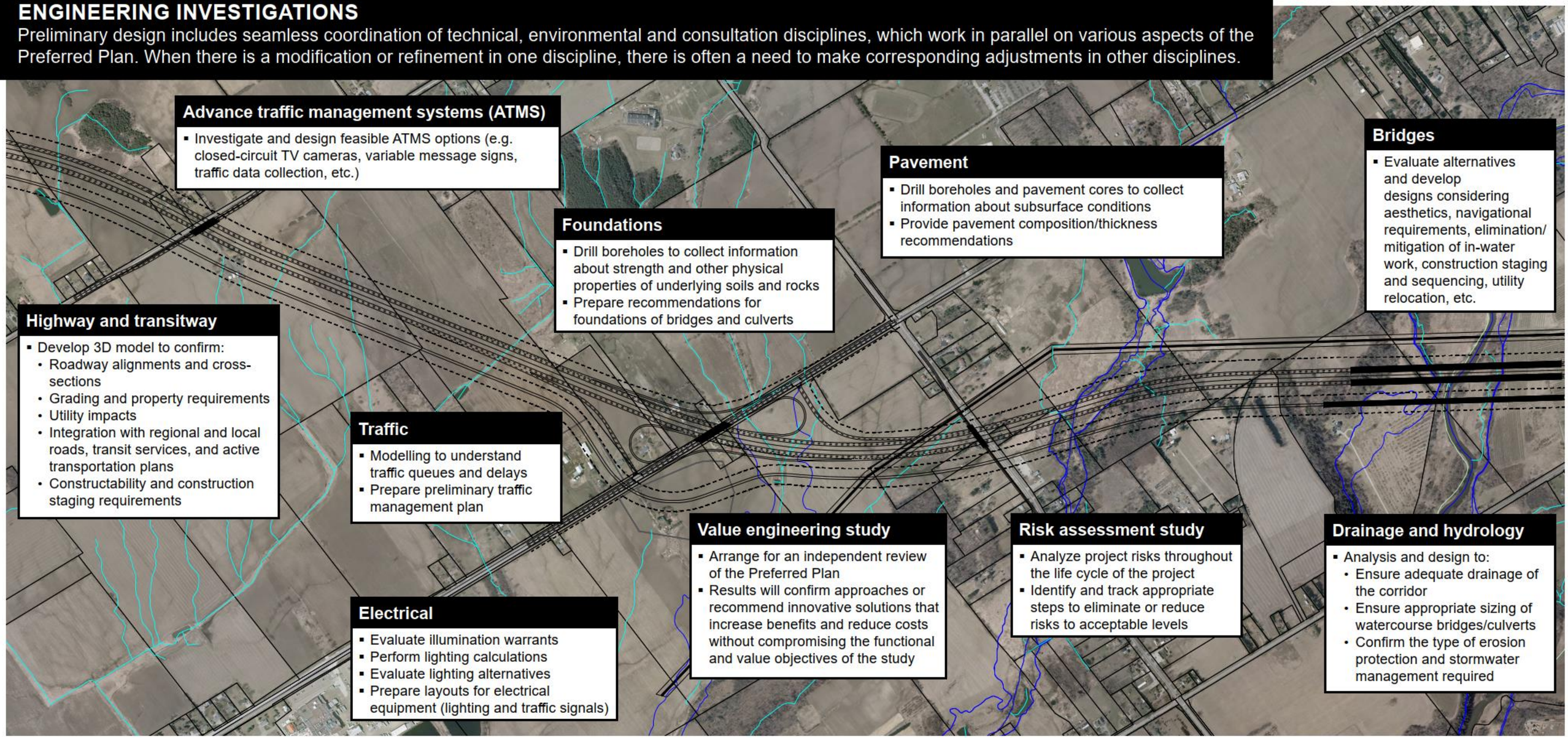
Field Investigations

- Field investigations will inventory the natural, social, cultural and other infrastructure features in the study area.
- Permission to enter properties have been received from some owners to allow access to lands in order to obtain valuable field information that is helping to develop the preliminary design of the Preferred Route.

Discipline	Type of Field Investigation
Natural Environment	Fisheries (2020 - 2022), Wildlife (2020 - 2022), Wetlands (2020 - 2022), Vegetation (2020 - 2022)
Socio-Economic Environment	Land Use (2021), Agriculture (2021), Potentially Contaminated Sites (2021)
Cultural Environment	Archaeology (anticipated 2022), Built Heritage (2020 & 2021), Cultural Heritage Landscapes (2020 & 2021)
Engineering	Fluvial Geomorphology (2020 & 2021), Drainage (2021), Structural (2021), Foundations (2021), Pavement (2022), Electrical (2022), Erosion and Sediment Control (2021)

ENGINEERING INVESTIGATIONS

Preliminary design includes seamless coordination of technical, environmental and consultation disciplines, which work in parallel on various aspects of the Preferred Plan. When there is a modification or refinement in one discipline, there is often a need to make corresponding adjustments in other disciplines.



Advance traffic management systems (ATMS)

- Investigate and design feasible ATMS options (e.g. closed-circuit TV cameras, variable message signs, traffic data collection, etc.)

Foundations

- Drill boreholes to collect information about strength and other physical properties of underlying soils and rocks
- Prepare recommendations for foundations of bridges and culverts

Pavement

- Drill boreholes and pavement cores to collect information about subsurface conditions
- Provide pavement composition/thickness recommendations

Bridges

- Evaluate alternatives and develop designs considering aesthetics, navigational requirements, elimination/ mitigation of in-water work, construction staging and sequencing, utility relocation, etc.

Highway and transitway

- Develop 3D model to confirm:
  - Roadway alignments and cross-sections
  - Grading and property requirements
  - Utility impacts
  - Integration with regional and local roads, transit services, and active transportation plans
  - Constructability and construction staging requirements

Traffic

- Modelling to understand traffic queues and delays
- Prepare preliminary traffic management plan

Value engineering study

- Arrange for an independent review of the Preferred Plan
- Results will confirm approaches or recommend innovative solutions that increase benefits and reduce costs without compromising the functional and value objectives of the study

Risk assessment study

- Analyze project risks throughout the life cycle of the project
- Identify and track appropriate steps to eliminate or reduce risks to acceptable levels

Drainage and hydrology

- Analysis and design to:
  - Ensure adequate drainage of the corridor
  - Ensure appropriate sizing of watercourse bridges/culverts
  - Confirm the type of erosion protection and stormwater management required

Electrical

- Evaluate illumination warrants
- Perform lighting calculations
- Evaluate lighting alternatives
- Prepare layouts for electrical equipment (lighting and traffic signals)

*** The highway and transitway right-of-way is preliminary (alignment to be confirmed) .**

ENVIRONMENTAL STUDIES

We are currently completing studies to establish baseline conditions, complete impact assessments and develop measures to avoid, minimize or mitigate potential effects in the following areas:

Landscape composition

- Examine existing landscape conditions
- Identify mitigation and enhancement treatments for significant vegetation, viewsheds, topography and landform

Contaminated property and waste management

- Identify, investigate and assess any properties/sites with high potential for potential environmental concern

Surface water and fluvial geomorphological

- Review existing conditions
- Identify measures to mitigate future erosion risk
- Identify stormwater management and watercourse impacts and mitigation

Groundwater

- Characterize hydrogeological conditions
- Identify potential groundwater impacts and mitigation

Built heritage and cultural heritage landscapes

- Map resources to identify areas and individual sites of particular significance and sensitivity

Noise

- Identify noise sensitive areas
- Conduct noise modelling analysis to determine impacts
- Determine need and type of noise mitigation

Air quality and greenhouse gas emissions

- Follow MTO's Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects, as it relates to assessing and mitigating impact to air quality

Snow drift

- Calculate the amount of snow available to drift towards the highway using numerical modelling tools
- Identify potentially problematic areas for snow drifting onto the infrastructure
- Recommend mitigation for each potentially problematic area

Land use factors including agriculture

- Update land use information using field reviews, aerial photography, mapping and municipal information
- Undertake Agricultural Impact Assessment, or equivalent study
- Provide recommendations that minimize impact on agriculture and existing/proposed land uses

Archaeology

- Identify archaeological resources through background review and field studies
- Recommend mitigation measures or requirement of Stage 3 assessment as necessary

Terrestrial ecosystem

- Assess wildlife habitat, wetlands, and designated areas
- Complete plant inventories and conduct species at risk screening
- Inventory Greenbelt designated lands
- Consider measures to avoid, minimize or mitigate potential effects (including using the Greenbelt Guideline)

Fish and fish habitat

- Conduct aquatic habitat surveys
- Conduct species at risk screening
- Consider measures to avoid, minimize or mitigate potential effects

*** The highway and transitway right-of-way is preliminary (alignment to be confirmed) .**

Design Considerations In The Greenbelt

- The *Guideline for Planning and Design of the GTA West Corridor Through the Greenbelt* was drafted in Stage 1 with input from the Greenbelt Transportation Advisory Group.
- The Guideline contains key planning and design principles and mitigation measures for placing the corridor within areas of the Greenbelt where impacts are unavoidable.
- Key elements of the Guideline include:
  - Impact avoidance, where possible.
  - Community sensitive design.
  - Consideration of impacts to road ecology and wildlife.
  - Consideration of impacts to agriculture.
  - Stormwater management.
  - Flexibility with geometric and bridge design to avoid or reduce impacts.

Footprint reduction and avoidance of sensitive features:

Reduced road width

Reduced median

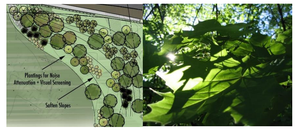
Curb and gutter

Retaining walls

Causeway or bridge

Innovation and signature bridges, including wildlife crossings:

Other design options include:



Attenuation through planting

Forest edge management and restoration

Wildlife measures

Naturalized stormwater management

Changes to Social, Economic and Health Conditions of Municipalities

- Anticipated changes are based off other studies that are similar in scope and nature, professional experience. We will be studying:

Potential changes to social infrastructure:

- Community infrastructure (roads, waste, police).
- Housing (demand, cost).
- Land use (green space, agriculture, recreation, tourism).
- Visual aesthetic (visual enjoyment).

Potential changes to economic infrastructure:

- Economic growth.
- Employment opportunities.
- Inflation.
- Travel and tourism.
- Real estate.

Potential changes to health and public safety:

- Air quality.
- Noise.
- Personal stress.
- Accidents and malfunctions.
- Community safety.

GBA+

- A systematic way to determine how all populations (Indigenous and non-Indigenous) may experience/receive the project.
- Includes all groups who may be vulnerable/at-risk in response to a significant change in their environment.

Community Engagement Webinars (July and September 2021)

- To further meet the public's needs and address community questions, the Highway 413 Project Team hosted two Community Engagement Webinars where stakeholders were provided with the opportunity to understand more about the project and have their questions answered.

- A brief overview of the project was provided, followed by a question & answer period.
  - 457 stakeholders attended the event in July, 285 in September
  - 265 comments or questions were submitted through the Q&A box in July, 171 in September

Questions Asked at Community Engagement Webinars

Have you considered the 407ETR as an alternative to a new highway?

Is the corridor needed if more people will be working from home in the future?

Will the highway be tolled?

Have Indigenous communities been engaged? Would Indigenous artwork be incorporated along the highway?

How is agriculture being considered in this study?

Given there is a climate change emergency, why would you contemplate building a new highway?

What is the Ministry's position on the Brampton Heritage Heights Boulevard Concept?

Explain how air quality impacts are being considered in the study? How much lower would GHG emissions be if the highway wasn't built?

Will the Ministry agree to TRCA's Voluntary Project Review?

How can the government say it is protecting Greenbelt lands but then build a new highway?

Will any properties need to be expropriated and will the owners be given a fair deal?

How are you considering SAR? Have these species been observed and what mitigation measures are proposed?

Are there more visually pleasing ways to reduce noise than noise walls? Can you plant trees to stop noise and pollution?

What side of the highway will the transitway be on? What amenities are you considering?

CEW #1 Summary Report, including responses to all questions asked, is on the project website under the Consultation tab. CEW #2 Summary Report is being drafted.

Next Steps

Fall 2021 – Early 2022	Further develop the draft Community Value Plan and preliminary design of the Preferred Route. Continue to meet with Indigenous Communities, municipal staff, municipal Councils. Public Information Centre is expected in late 2021. Develop the Initial Project Description and submit to the Impact Assessment Agency of Canada in early 2022.

*** Schedule is subject to change**

Open Discussion

Thank you

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