Appendix A: Block 27 Transportation Network

City of Vaughan

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1 Introduction

Prior to approval of any development applications in Block 27, which is designated as "New Community Areas", a Secondary Plan is required to be prepared and approved in accordance with the policies of Sections 10.1.1 and 10.1.1.1 of the VOP 2010. The Block 27 Secondary Plan will provide detailed policies with respect to land use, including height and density provisions, urban design, the protection of cultural heritage and archaeological resources, transportation, community facilities, natural heritage and open space.

On June 19, 2018 the City of Vaughan Council approved an amendment to the VOP 2010 to provide for the adoption of the Block 27 Secondary Plan.

In support of the Block 27 Secondary Plan Study to determine the transportation network required for Block 27, the NVNCTMP project team investigated opportunities and constraints within the block, looked at existing and forecasted transportation demand, considered and explored connectivity to greater transportation network, and considered safe and sustainable transportation options. Several network alternatives were identified and evaluated leading to a recommended transportation network for the Block 27 Secondary Plan.

2 Planning Policies

2.1 Policy Framework

The Block 27 Secondary Plan builds on the policy framework established at the provincial, regional, and local level. As a result, development in Block 27 is intended to create a complete community which will be compact, vibrant, inclusive, healthy, sustainable, and diverse, with a mix of uses and densities that achieve the minimum provincial and regional requirements. The Plan will prioritize people, sustainability and livability, as well as high quality urban design.

The Block 27 Secondary Plan conforms to provincial and regional policies including the Growth Plan, 2017, the Greenbelt Plan, 2017 and the York Region Official Plan (YROP).

Effective July 1, 2017, the Greenbelt Plan (2017) is an update to the original plan which protects the ecological, agricultural, and hydrological land use. The Greenbelt Plan identifies areas where urbanization should not occur. Lands identified in the Niagara Escarpment Plan (NEP) and the Oak Ridges Moraine Conservation Plan (ORMCP) are also included in the Greenbelt Plan.

For more detailed analysis of the policy framework for Block 27 Secondary Plan Area, please refer to the *Secondary Plan for Block 27 New Community Area Study Report*, June 2018.

3 Block 27 Land Use

New Community Area - Block 27 is bounded by Kirby Road to the north, Keele Street to the east, Teston Road to the south and Jane Street to the west. It has an area of approximately 400 hectares (990 acres) made up almost entirely of rural lands. The TransCanada Pipeline runs

across the northern part of the Block and the GO Train railway runs adjacent to Keele Street in the eastern section of the Block.

Block 27 is envisioned as a complete community that prioritizes people, sustainability, and liveability with a high quality of urban design. It will have a mix of low and mid-rise buildings with a blend of residential, commercial, and institutional uses. Block 27 will be anchored by a local centre that has schools, community facilities, and a transit hub. The preliminary Block 27 land use and transportation plan proposes to include:

- A transit hub station area (GO/YRT) located in the northeast quadrant of Block 27, which is being planned by Metrolinx concurrently with the Block 27 Secondary Plan and this NVNCTMP as the Kirby GO Transit Hub Sub-Study.
- A mix of low rise and mid-rise residential as well as low-rise and mid-rise mixed uses, with a new GO station and Local Centre surrounding the GO Station.
- A collector road network that will maximize mobility choices.
- A recreational trail system connecting to the proposed TransCanada Pipeline Trail.
- Jog elimination at Jane Street and Kirby Road.
- Grade separations at intersections with the GO Barrie Corridor.

According to the Block 27 Secondary Plan, Policy 3.1.2 Density:

a. *Through the policies of this Plan, the City shall seek to meet an overall minimum density of 70 people and jobs combined per hectare by 2031 for Block 27 and a minimum density target of 100 people and jobs combined per hectare for the Kirby GO – Transit Hub Centre, with a minimum density target of 150 people and jobs combined per hectare within 500 metres, an approximate 10 - minute walking distance, of the Kirby GO Station, as identified on Schedule B of this Plan*

Detailed land use information was provided for Block 27 and is shown in **Table 3-1** which illustrates that the maximum of each range was used for the analysis to provide a conservative estimate of its impact on the transportation network. The majority of the Block will be developed for residential land use, with mixed land use located adjacent to the major arterials. Employment sources in the Block are from mixed land uses and education.

Table 3-1: Block 27 Population and Employment

Quadrant	2031 Population	2031 Employment
North	2,970	600
South	15,150	510
East	4,450	910
West	3,790	130
Total	**26,360**	**2,150**

The Block 27 Land Use Plan is illustrated in **Exhibit 3-1**.

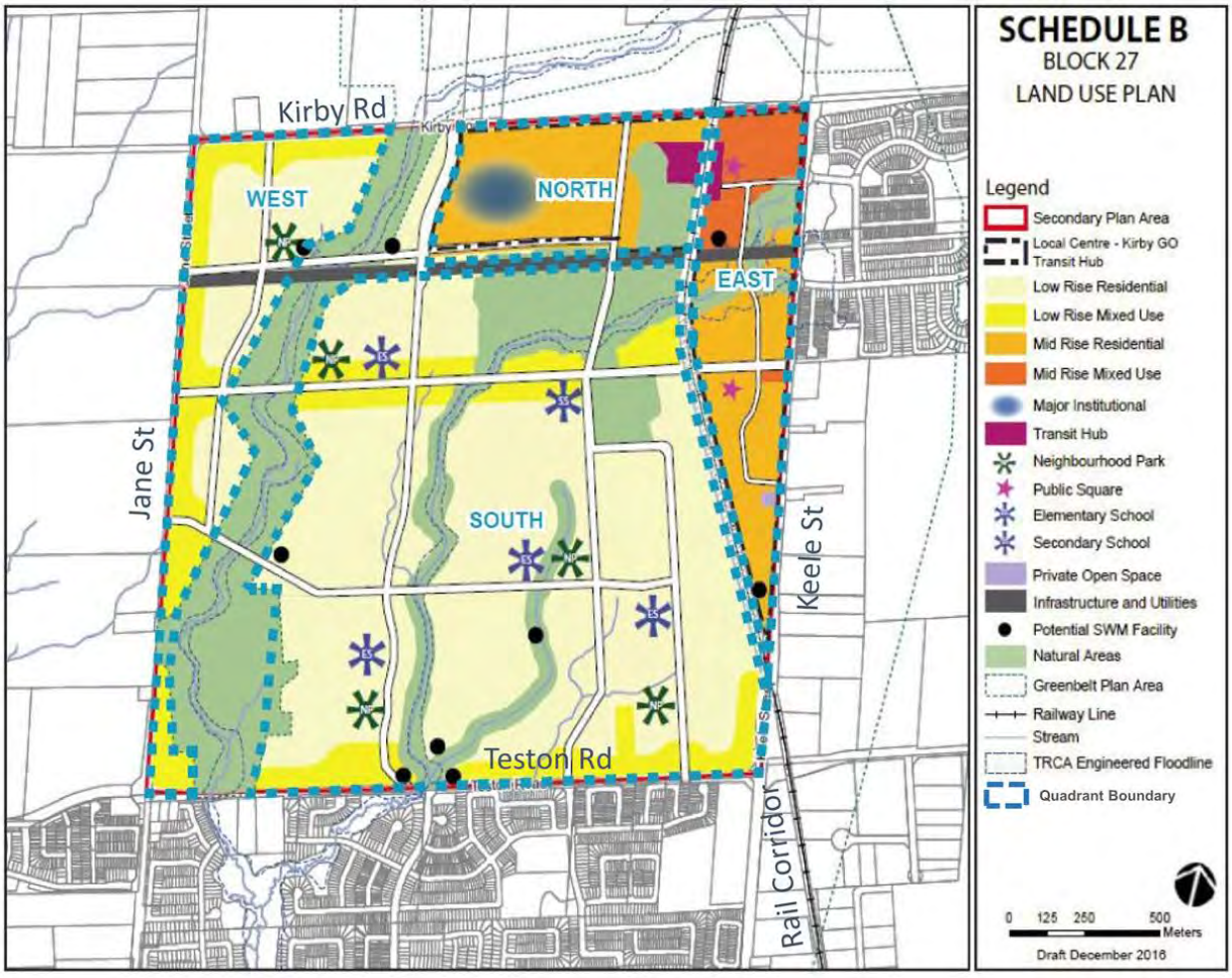

Exhibit 3-1: Block 27 Land Use Plan

Source: Block 27 Secondary Plan, adopted by Vaughan City Council on June 19, 2018.

4 Constraints

4.1 Natural Heritage System

The Greenbelt Plan Natural Heritage System extends into the Block 27 Secondary Plan area along the West Don River in a north-south direction on the western side of the Secondary Plan area. The lands along the West Don are coincident with the Regional Greenlands System. The VOP 2010 identifies a Natural Heritage Network (NHN) within Block 27 comprised of Core Features and Enhancement Areas, which includes the Regional Greenlands System, as well as other lands. The NHN from VOP 2010 is identified in **Exhibit 4-1** while the Block 27 NHN is illustrated in **Exhibit 4-2**.

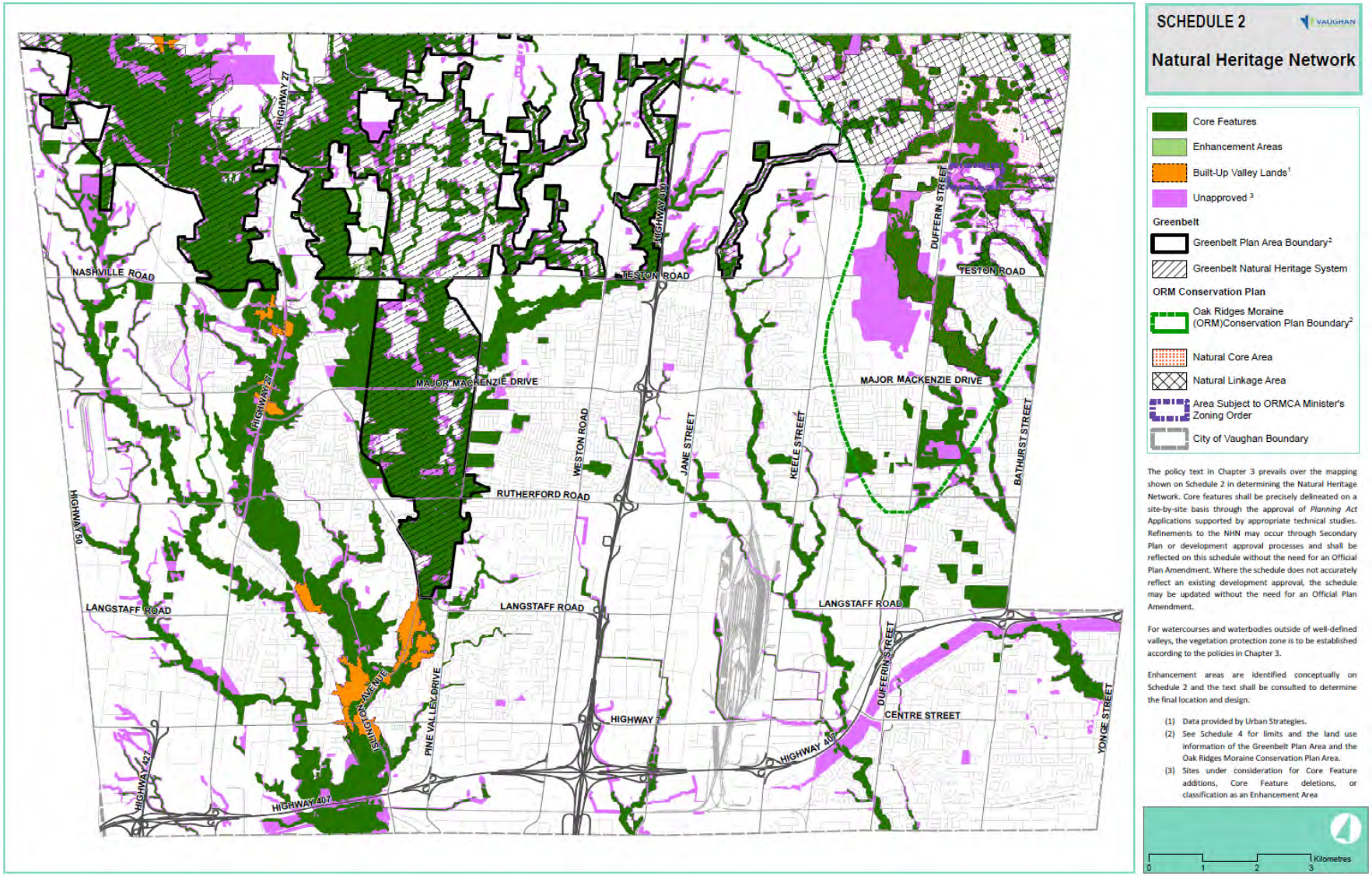

Exhibit 4-1: Natural Heritage Network
Source: Schedule 2, Vaughan Official Plan 2010, schedule updated April 2018

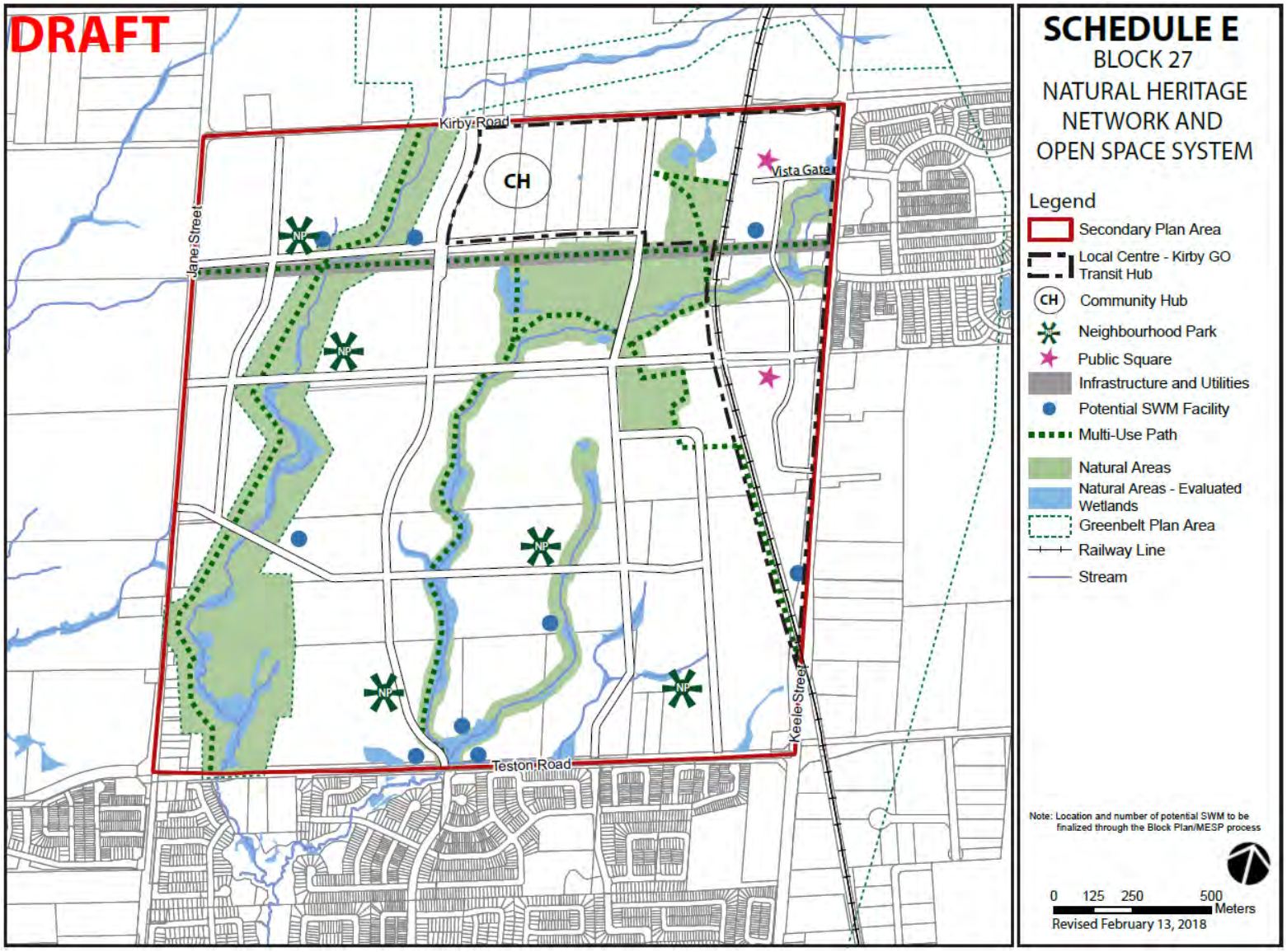

Exhibit 4-2: Block 27 Natural Heritage Network
Source: Block 27 Secondary Plan (DRAFT), February 13, 2018

The Secondary Plan for Block 27 identifies the City's NHN more specifically and integrates it into the community design including establishing policies that encourage remedial works and enhancement opportunities within the NHN.

The City's NHN includes natural heritage features outside of the Greenbelt and Regional Greenland system which exist within the NVNCTMP Study Area including watercourses, fish habitats, wetlands, Significant Woodlands, and Significant Wildlife Habitat. The NVNCTMP Study Area is impacted by two major watersheds – the East Humber River and the Don River. The West Don River is a north-south river that runs along the west side and Kirby Creek is located throughout the centre and northeast quadrant of Block 27. The lands along these hydrological features are part of the Protected Countryside of the Greenbelt Area and part of the Natural Heritage System.

The Natural Heritage Assessment/ Ecology component of the West Don River Subwatershed Study, which was undertaken by Cole Engineering and Beacon Environmental on behalf of the Block 27 Landowners Group (completed June 2017), addresses refinements to the City's NHN, as well as the Phase 2-4 Natural Heritage Network Study (2014). The Natural Heritage Network Study identifies a preliminary potential NHN for Block 27 and has been further reviewed by North South Environmental Inc. (NRSI), the City's environmental consultant. In addition, the Ministry of Natural Resource and Forestry (MNRF) has carried out a wetland evaluation in August 2017 which determined that there are several Provincially Significant Wetlands (PSWs) located centrally in the east half of Block 27.

Specifics of the Natural Heritage System including the full extent of Significant Wildlife Habitat are to be addressed in the Block Plan.

4.2 Topography

Block 27 undergoes significant changes in topography, with an increase of approximately 40 metres in height from the southwest to the northeast quadrants of the Block. Topography changes are also more prominent along the creeks and there is an approximate 25 metre drop in elevation from Kirby Road to Teston Road. As part of the Secondary Plan, these factors will be considered in the storm water, servicing, grading, and natural heritage protection analysis.

4.3 Hamlet of Teston

Located along the east side of Jane Street and north of Teston Road, there are approximately 16 properties which are recognized as the Hamlet of Teston in the York Region Official Plan. The rears of these lots are located within the Greenbelt Plan and therefore continue to be governed by the local Official Plan policies. The City of Vaughan Official Plan Cultural Heritage Landscape Inventory and Policy Study (2010) has recognized this area as having cultural heritage significance that will require further assessment. There are also existing built heritage resources within the Hamlet, recognized by the City of Vaughan Heritage Inventory. As per Section 4.4.3 of this Plan, any proposed demolitions of these buildings require that the owner gives City of Vaughan Council at least 60 days' notice in writing of the owner's intention to demolish or remove the building or structure. The Block 27 Secondary Plan will identify the appropriate interface between the development and the existing uses in the Hamlet of Teston.

4.4 Existing Land Uses and Ownership

Excluding the Hamlet of Teston, Block 27 is primarily composed of vacant or agricultural lands. There are other uses including institutional uses, a commercial site, and some residential homes.

Block 27 consists of approximately 20 landowners who own a parcel of land. The parcel sizes vary from approximately 1 hectare to 60 hectares. Due to the future development of the Block, these landowners formed a Landowners Group who have undertaken their own analysis by separate consultants to prepare for development. There is one large parcel of land located on the north side of Teston Road (approximately 11 hectares) and a number of small owners who are not part of the Group.

4.5 Railway Line

A north-south railway line crosses the study area on the eastern side of the Block close to Keele Street which limits connectivity between Block 27 and Keele Street – recognizing Metrolinx's future plans for Regional Express Rail (RER) and all-day two-way frequent GO service. The railway line crosses Kirby Road at grade level and has a grade separated rail crossing with Keele Street, which goes over the rail line. As part of the proposed Kirby GO Station, the railway crossing at Kirby Road has been identified for grade separation.

4.6 TransCanada Pipeline

A TransCanada Pipeline Canadian Mainline right-of-way (ROW) runs along the northern part of Block 27 in an east-west direction, creating a land use barrier. With the exception of road ROWs, no development is allowed in the Pipeline ROW. TransCanada has several regulations in regards to the Pipeline ROW, including:

- Early pre-consultation for any development proposal within 200 metres,
- No permanent structures or buildings within 7 metres. A reduction is allowed only if it is proved that it will not comprise the integrity or safety of the pipeline,
- No buildings or structure within 3 metres, and
- Any movement of heavy equipment, excavation, or blasting within 30 metres will be regulated by TransCanada.

Although there are several constraints within the Pipeline ROW, it does provide the opportunity to use the corridor for active transportation connections across Block 27, including open space linkages and trails.

5 Collector Road Network Development

A collector road network is required within Block 27 to support development. As part of the Vaughan Official Plan 2010, "new development shall be planned to support a grid-like street network with multiple connections to collector and arterial streets". Where feasible, the network should provide a minimum of 2 north-south and east-west collector streets with connections to adjacent blocks and the arterial road network. This would allow for road users to travel within and to adjacent concession blocks without using the arterial road network.

Because of the constraints to the street network identified in the previous section, preliminary feasibility analysis identifies only one east-west collector road that spans the entire block from Jane Street to Keele Street. Similarly, the NHN constraints result in only two crossings that span the entire block from Kirby Road to Teston Road. The alternative networks identified in the following section consider these constraints to the network.

5.1 Alternative Transportation Networks

The evolution of the preferred network for Block 27 followed an integrated approach in consultation with the Block 27 Secondary Plan team, landowners and their representatives, and the NVNCTMP study team. Through this process, three distinct networks were identified and evaluated to identify a preferred network:

1. The first network alternative is a preliminary transportation network developed based on background information provided by the Block 27 Landowners group. This network was identified prior to the start of the Block 27 process and modified following further study and consultation with the City.
2. The second alternative was developed after April 2015 through a workshop with stakeholders' input.
3. The third alternative was developed in consideration of the 2016 YR-TMP update and an initial feasibility assessment in December 2015.

The collector network alternatives are illustrated in **Exhibit 5-1**. It is noted that some consistencies are observed between the plans, while some streets are not consistent. A naming system has been identified for the general location of major collector streets. A description of all streets between the three alternatives is provided in **Table 5-1**. It is to be noted that all road networks shown are subject to refinement through the secondary plan, block plan, and project specific EA processes.

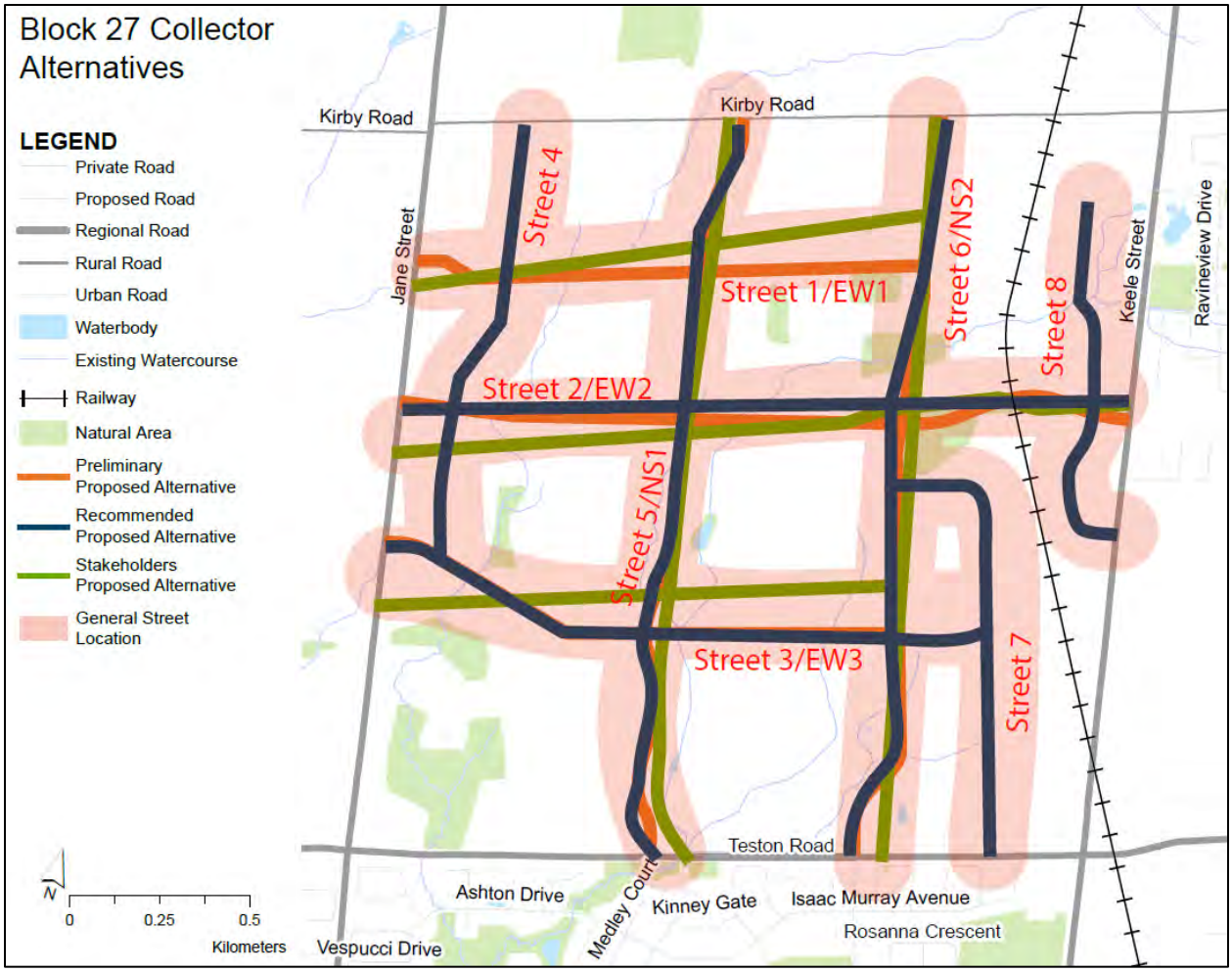

Exhibit 5-1: Block 27 Collector Alternatives Comparison

Table 5-1: Comparison of Collector Roads for Block 27 Alternatives

Street Name	Consistencies	Differences
EW1 / 1	• Connection to Jane Street and NS1 / 5 • Located between Kirby Road and the TCPL • No Connection to Keele Street	• Alternative 1 connection to Jane Street is futher north • Alternative 2 alignment to NS2 is further north • Alternative 3 provides connection to Street 4
EW2 / 2	• Only east-west collector connecting Jane Street to Keele Street • Provides connections to NS1 / 5 and NS2 / 6	• The alignment varies between all alternatives • Alternative 3 provides connections to Streets 4 and 8
EW3 / 3	• Alternatives 1 and 3 have the same alignment	• Alternative 2 has a different alignment • Alternative 3 provides connections to Streets 4 and 8
4	• *N/A*	• Not identified in Alternatives 1 and 2
NS1 / 5	• Provides connections to Kirby Road, Teston Road, EW1 / 1, EW2 / 2, and EW3 / 3	• The alginment varies between all alternatives • Alternative 2 does not align with Cranston Park Avenue south of Teston Road
NS2 / 6	• Alternatives 1 and 3 have the same alignment • Provides connection to Kirby Road, Teston Road, EW1 / 1, EW2 / 2, and EW3 / 3	• Alternative 2 has a different alignment • Alternative 3 provides a connection to Street 7
7	• *N/A*	• Not identified in Alternatives 1 and 2
8	• *N/A*	• Not identified in Alternatives 1 and 2

5.2 Evaluation Criteria

The alternatives were evaluated against the following major criteria:

- Transportation
- Natural Environment
- Socio-Economic Environment
- Cost and Implementation

The indicators used in the evaluation of the alternatives are documented and described in **Table 5-2**.

The sub-criteria are weighted equally; therefore the total score for each criterion is the average score of the sub-criteria. However, each of the major criteria carries different weightings at a qualitative level when compared against each other.

Table 5-2: Evaluation Criteria

CRITERIA	INDICATORS
TRANSPORTATION	
Network and system connectivity, mobility and accessibility *Promote accessibility for all travel modes to adjacent land uses for users of all ages and abilities, and aligned with VOP 4.1.1.1, 4.2.1.20, and 4.2.1.23.*	• Builds a finer-grain collector road system • Network connectivity to provincial and regional road network • Network continuity between adjacent concession blocks • Facilitates higher occupancy travel • Appropriate network configuration and intersection spacing

CRITERIA	INDICATORS
Active Transportation *Pedestrian and bicycle friendly neighbourhoods*	• Connectivity to the Regional active transportation network • Provides safer walking and cycling facilities through the community and to/from potential future transit stops and the planned transit hub area.
Transit **Capitalize on transit investment** *Promotes reliable, convenient and seamless transit*	• Integrated multimodal connectivity to Metrolinx (GO Station and associated transit infrastructure) and YRT transit networks • Facilitates transit routing, service and operations
NATURAL ENVIRONMENT	
Natural Areas *Affects/Potential for impact to natural heritage*	• *Qualitative* assessment of road improvements in greenbelt areas or significant woodlands • New water crossings
Environmentally Sensitive Areas *Affects/Potential for impacts to designated ESA*	• *Qualitative* assessment of road improvements adjacent to/within designated Environmentally Sensitive Areas (ANSI, ESA, PSW, etc)
Habitat Areas *Affects/Potential for impacts (Endangered Species)*	• *Qualitative* assessment of potential for effects on designated wildlife, fish / aquatic habitat areas
Surface water, groundwater Affects/potential for impacts	• *Qualitative* assessment of impact to surface water runoff • *Qualitative* assessment of impact to groundwater quality • Provides opportunities to provide green infrastructure and improve stormwater management
SOCIO-ECONOMIC ENVIRONMENT	
Heritage Resources and Archaeological Features	• *Qualitative* assessment of road improvement adjacent to/within significant built heritage resources/ archaeological areas.
Economic Growth *Supports employment areas*	• Supports Highway 400 North Employment Areas
Active and Healthy Community	• Supports new transit oriented development • Provides direct routes to increase walkability and promote cycling • Minimizes tailpipe emissions by providing direct routes and reducing auto reliance
IMPLEMENTATION	
Capital Costs	• Network / improvement costs
Maintenance and Operational Costs	• Maintenance and operational costs

5.3 Assessment of Alternatives

Table 5-3 documents the detailed assessment of the alternatives based on the evaluation criteria in **Table 5-2**. It is noted that the comments focus specifically on collector road impacts.

Table 5-3: Assessment of Alternatives

CRITERIA	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
TRANSPORTATION			
Network and system connectivity, mobility and accessibility *Promote accessibility for all travel modes to adjacent land uses for users of all ages and abilities and aligned with VOP 4.1.1.1, 4.2.1.20, and 4.2.1.23.*	• **North:** provides two connections to Kirby Road • **East:** does not provide any connections to adjacent blocks. Only one connection to Keele Street. • **South:** connectivity provided to 1 of 2 collector roads to adjacent block. Provides two connections to Teston Road. • **West:** collector road connectivity provided to 3 of 4 proposed collector roads in the Block 34 Secondary Plan. Provides three connections to Jane Street.	• **North:** provides two connections to Kirby Road • **East:** does not provide any connections to adjacent blocks. Only one connection to Keele Street. • **South:** connectivity provided to all collector roads to adjacent block. Provides two connections to Teston Road. • **West:** collector road connectivity provided to 3 of 4 proposed collector roads in the Block 34 Secondary Plan. Provides three connections to Jane Street.	• **North:** provides three connections to Kirby Road • **East:** provides two connections to adjacent Block, one of which is to the Future North Maple Regional Park. Provides three connections to Keele Street. • **South:** connectivity provided to all collector roads to adjacent block. Provides three connections to Teston Road. • **West:** collector road connectivity provided to 3 of 4 proposed collector roads in the Block 34 Secondary Plan. Provides three connections to Jane Street. • The addition of two collector roads to the network provides a finer-grid collector road system
Active Transportation *Pedestrian and bicycle friendly neighbourhoods*	• Trail system identified along natural heritage corridors and the TCPL	• Does not identify any trails along natural heritage corridors	• Trail system identified along natural heritage corridors, the TCPL, the railway line, and provides active connections to the Future North Maple Regional Park • Additional connections to the Regional Road network provides more connections to Region's active transportation network
Transit **Capitalize on transit investment** *Promotes reliable, convenient and seamless transit*	• Access to Kirby GO Station identified from Keele Street, adjacent to Vista Gate	• Access to Kirby GO Station identified from Keele Street, adjacent to Vista Gate	• Street 8 provides additional support to transit routing, service, and operations • Provides several accesses to Kirby GO Station
NATURAL ENVIRONMENT			
Natural Areas *Affects/Potential for impact to natural heritage*	• Requires approximately 11 new water crossings • Street EW2 passes through a significant woodlot	• Requires approximately 11 new water crossings	• Requires additional new water crossings (total of 13) due to additional collector roads (Streets 7 and 8)

CRITERIA	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
			• Additional collector roads in the eastern section of the Block are in the Natural Heritage Network
Environmentally Sensitive Areas *Affects/Potential for impacts to designated ESA*	• Crosses 7 environmentally sensitive areas	• Crosses 7 environmentally sensitive areas	• Crosses additional environmentally sensitive areas due to additional collector roads (Streets 7 and 8)
Habitat Areas *Affects/Potential for impacts (Endangered Species)*	• Street NS2 crosses habitat area between EW1 and EW2 • Street EW2 passes through a significant woodlot and may affect habitat areas	• Street NS2 crosses habitat area between EW1 and EW2	• Street 6 crosses habitat area between Streets 1 and 2
Surface water, groundwater *Affects/Potential for impacts*	• Minimal paved surfaces	• Minimal paved surfaces	• Additional paved surfaces due to Streets 4, 7 and 8
SOCIO-ECONOMIC ENVIRONMENT			
Heritage Resources and Archaeological Features	• Collector network does not interfere with the Hamlet of Teston	• Collector network does not interfere with the Hamlet of Teston	• Collector network does not interfere with the Hamlet of Teston
Economic Growth *Supports employment areas*	• Provides 3 out of 4 connections to Highway 400 Employment Area	• Provides 3 out of 4 connections to Highway 400 Employment Area	• Provides 3 out of 4 connections to Highway 400 Employment Area • Finer-grid road network provides additional connectivity to employment areas
Active and Healthy Community	• Provides only one connection to Keele Street • Provides connectivity to only 1 of 2 collector roads to the south of the Block	• Provides only one connection to Keele Street • Provides connections to all collectors for adjacent eastern and southern Blocks	• Finer-grid road network provides additional connectivity to major collectors, adjacent Blocks, and the Regional Road system • Provides three connections to Keele Street • Provides connections to all collectors for adjacent eastern and southern Blocks
IMPLEMENTATION			
Capital Costs	• Alignments of the collector roads result in a higher capital cost	• Direct connections and alignments of the collector network will result in the lowest capital cost of the alternatives	• Additional collector roads increases capital costs • Highest capital cost of the alternatives
Maintenance and Operational Costs	• Fewer roads result in a lower maintenance and operational cost	• Fewer roads result in a lower maintenance and operational cost	• Finer-grid road network results in higher maintenance and operational costs

5.4 Evaluation of Alternatives

Table 5-4 illustrates the rating of each criteria based on the assessment in **Table 5-3**. Criteria are rated on a 3-point scale from least supportive (○) to most supportive (●).

Table 5-4: Evaluation of Block 27 Collector Road Alternatives

CRITERIA	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
TRANSPORTATION			
Network and system connectivity, mobility and accessibility *Promote accessibility for all travel modes to adjacent land uses for users of all ages and abilities*	○	○	●
Active Transportation *Pedestrian and bicycle friendly neighbourhoods*	○	○	●
Transit **Capitalize on transit investment** *Promotes reliable, convenient and seamless transit*	○	○	●
NATURAL ENVIRONMENT			
Natural Areas *Affects/Potential for impact to natural heritage*	◑	●	○
Environmentally Sensitive Areas *Affects/Potential for impacts to designated ESA*	●	●	○
Habitat Areas *Affects/Potential for impacts (Endangered Species)*	◑	●	○
Surface water, groundwater *Affects/potential for impacts*	●	●	○
SOCIO-ECONOMIC ENVIRONMENT			
Heritage Resources and Archaeological Features	●	●	●
Economic growth *Supports employment areas*	○	○	●
Active and Healthy Community	○	◑	●
IMPLEMENTATION			
Capital Costs	●	●	○
Maintenance and Operational Costs	●	●	○

As mentioned previously, the sub-criteria are equally weighted while the major criteria carry different weightings. The problem and opportunity statement identified for this study seeks to determine optimal network solutions for the broader transportation network considering the study area as a whole. The evaluation is thus weighted more heavily for transportation network benefits. Following the completion of the Transportation Master Plan, individual projects will be assessed for natural environment, socio-economic, and cost and implementation at a finer level of detail.

Table 5-5 provides the relative weighting considered in the overall evaluation summary. Each full circle in a category counts as one point, a half circle is a half point, and an empty circle represents zero points. An alternative can score a maximum of 8 points based on the weighting factor.

Table 5-5: Relative TMP Criteria Weighting

Criteria	Weighting Factor
Transportation	✓✓✓
Natural Environment	✓✓
Socio-Economic Environment	✓✓
Cost and Implementation	✓

Table 5-6 illustrates the overall evaluation of the alternatives dependent on the weighting factor. ***The Refined City Network, Alternative 3, is the preferred collector network for Block 27.***

Table 5-6: Overall Evaluation of Alternatives for Block 27

Criteria	Alternative 1	Alternative 2	Alternative 3
Transportation	○	○	●
Natural Environment	●	●	○
Socio-Economic Environment	○	◑	●
Implementation	●	●	○
OVERALL SCORE	3 SCREEN OUT	4 SCREEN OUT	5 CARRY FORWARD

6 Detailing of the Preferred Collector Network

In refining the collector roads in Block 27, efforts were made to mitigate environmental and natural heritage impacts. As mentioned in **Section 4.1**, the Natural Heritage Network (NHN) identified in Block 27 illustrates areas of significant environmental features including wildlife habitat areas, permanent and intermittent watercourses, aquatic habitats, and fish communities. As a result, the alignment of the collector road network must be designed to minimize the impact on the NHN. Based on the Refined Collector Network, the following recommendations were considered:

- Realignment of Streets 1 and 2 to avoid the woodland in the east,
- Realignment of the Street 6 connection between Streets 1 and 2 to avoid a woodland and significant wildlife habitat,
- Realignment of Street 6 south of Street 2 to avoid a woodland and significant wildlife habitat,
- Realignment of Street 3 to connect further north at Jane Street to avoid the crossings of watercourses,
- Realignment of the Street 5 connection to Cranston Park Avenue, and
- Realignment of Street 6 to avoid crossing of seasonal environmental features.

Additional analysis on specific elements of the Refined City Network provides support for the need and justification for the identified transportation infrastructure to be carried forward for further study. Additional analysis was undertaken for the Street 2 grade separation, Street 5 connection to Cranston Park Avenue at Teston Road, and for Street 6 which traverses the significant woodlot between Street 1 and Street 2.

6.1 Street 2 Alignment and Grade Separation

Four location alternatives for an east-west road with grade separated rail crossing options, are illustrated relative to the initial City Block 27 transportation network in **Exhibit 6-1**.

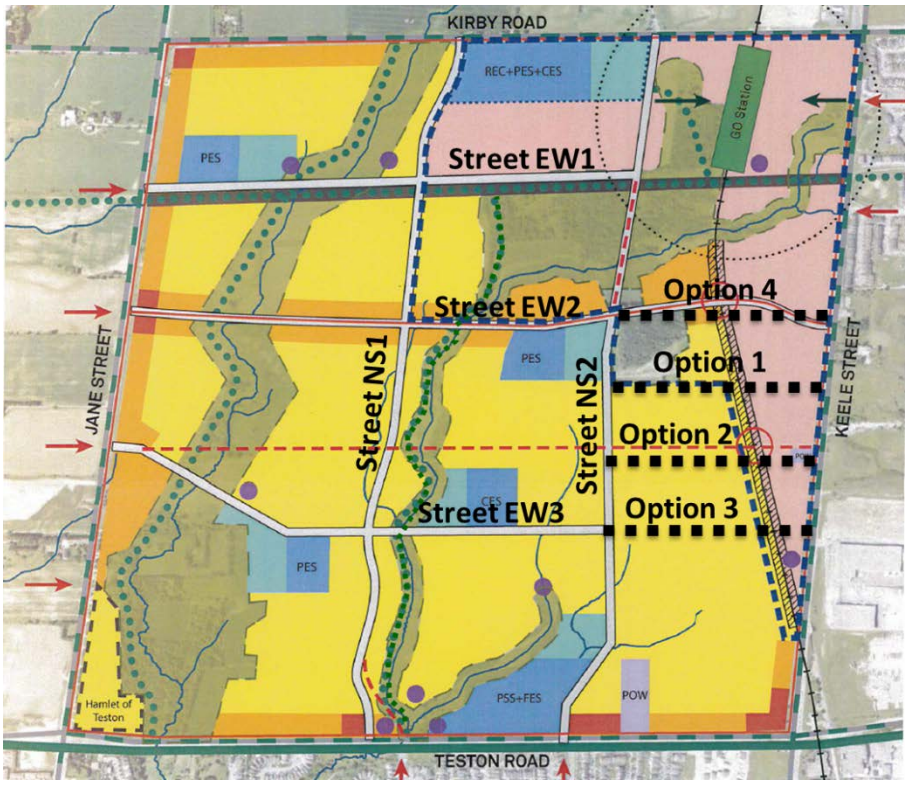

Exhibit 6-1: Grade Separated Rail Crossing Options

Details on each option are described below:

1. **Option 1** represents the approximate alignment of the Block 27 Secondary Plan Preliminary Land Use Concept.
2. **Option 2** alignment is just south of the existing cemetery at Keele Street. Based on the topography of the area, this location was identified as potentially minimizing amount of fill / embankment required to construct an overpass of the rail line.
3. **Option 3** provides a direct connection to Street EW3, as well as consolidating an existing access point to office uses on the east side of Keele Street.
4. **Option 4** represents the approximate alignment of the Block 27 Landowners Plan (Alternative 2).

Appendix A3 illustrates the preliminary profiles of these four options. For Option 1 and Option 4, additional sub-options were identified including potential underpasses which would allow for at grade intersections with local roads east of the rail crossing.

Each of the options are assessed based upon the criteria identified in **Table 6-1**, which were chosen because they provide general indications of engineering feasibility and cost at this conceptual planning stage. The resulting assessment based on these criteria is provided in **Table 6-2**.

Table 6-1: East-west Collector Road Rail Crossing Option Criteria

Criteria	Structure / Cut-Fill Length	Maximum Grade	Grade at Keele Street
Criteria Description	Desire to minimize this length - A longer structure or cut / fill distance tends to be more costly and impactful to developable lands	Desire to minimize grade which is impactful particularly to pedestrians, cyclists, buses and trucks. Also impacts ability to provide intersecting road accesses.	Desire to minimize grade particularly at major intersections, as grades impact sightlines and reduce overall safety considerations.

Because Keele Street is generally elevated above the rail tracks, overpass options for the rail crossing were considered for all options. However, where underpass options appeared feasible, these were considered and assessed.

Table 6-2: East-west Collector Road Rail Crossing Option Preliminary Screening

Option #	Structure / Cut-Fill Length	Maximum Grade	Grade at Keele Street	Result
1A – Overpass	630m	8%	-0.5%	Screen Out
1B - Underpass	440m	8%	8%	Screen Out
2 - Overpass	540m	8%	-0.9%	Screen Out
3 - Overpass	620m	8%	-3.1%	Screen Out
4A - Overpass	640m	8%	-0.6%	Screen Out
4B - Underpass	490m	6.7%	3.4%	Carry Forward
4C – Overpass at grade for 80m west of Keele Street	600m	8%	3.4%	Screen Out

Based on this analysis, Option 4B provides an optimal design that appears to minimize cut/fill length (quantity should be assessed through further study) and maximum grade. Further refinement to the profile would need to be undertaken to improve the design particularly at the Keele Street intersection, as this analysis only provides a preliminary feasibility assessment for planning purposes. While Option 1B underpass appears to have a minimal cut / fill length, this can only be achieved with an 8% grade leading into Keele Street which is not feasible – i.e. the intersection at Keele is likely too close to the railway tracks at this location.

Option 2 has the third shortest structure length with reasonable grade at Keele Street. However, it is recommended to screen this option out as it does not appear feasible to provide a connection to the lands east of the railway tracks with only about 40m at grade before meeting the Keele Street Centreline. Accounting for half of the Keele Street right-of-way it is closer to about 20m from stop bar to the centerline of the access point.

As such the **Block 27 network should carry forward Option 4B to provide east-west connectivity to the lands east of the railway tracks and Keele Street, subject to further study**.

6.2 Street 5 Connection to Cranston Park Avenue Recommendations

A direct connection between Street 5 and Cranston Park Avenue, subject to further study, is recommended for the preferred transportation network. The refinement would provide several transportation benefits, including:

- Connecting the existing neighbourhood south of Teston Road with the new Block 27 neighbourhood,
- Consolidating access points on Teston Road and improving traffic progression on the Regional Road,
- Extending existing transit service from Cranston Park Avenue into Block 27 and potentially feeding into the planned transit hub of Kirby GO Station, and
- Provide trail connection for the existing Bartley Smith Greenway Trail system, south of Teston Road, to extend into Block 27 and possibly connect to the proposed TransCanada Pipeline (TCPL) Trail system.

This connection poses a challenge due to the existing “Tributary A” culvert located directly across from Cranston Park Avenue. Preliminary assessment shows the issue may be addressed by diverting the watercourse, which is illustrated in **Exhibit 6-2**. Taking into consideration the potential environmental sensitivity and other possible changes, the Street 5 connection with Cranston Park Avenue would be subject to a separate Environmental Assessment study.

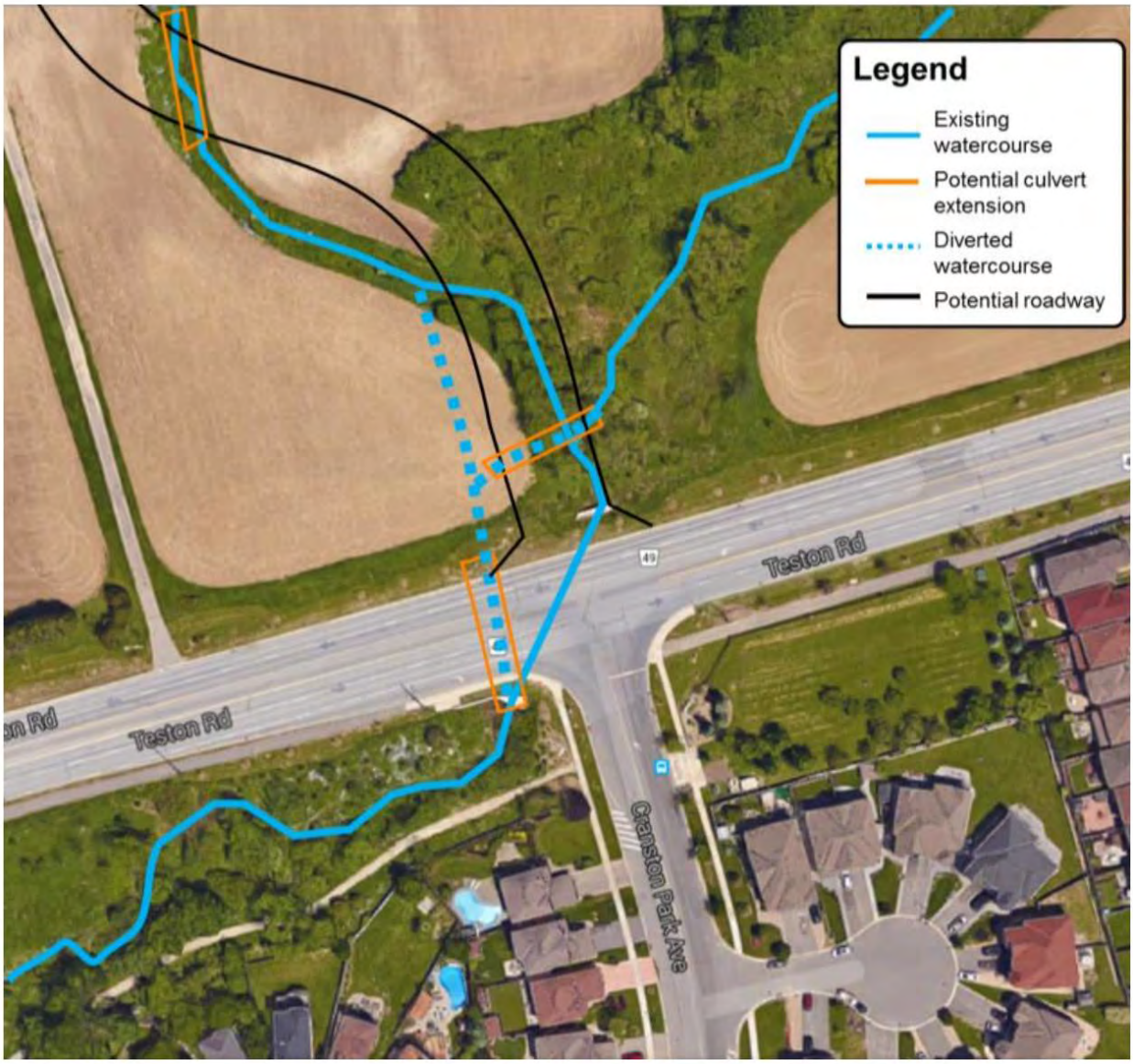

Exhibit 6-2: Potential Watercourse Diversion

The intersection of Cranston Park Avenue at Teston Road was assessed for 2031 turning movements to identify the potential benefit of providing a direction connection to the proposed north-south collector road, Street 5, in Block 27. Projected traffic volumes with a jogged intersection and with a continuous intersection are illustrated in **Exhibit 6-3**.

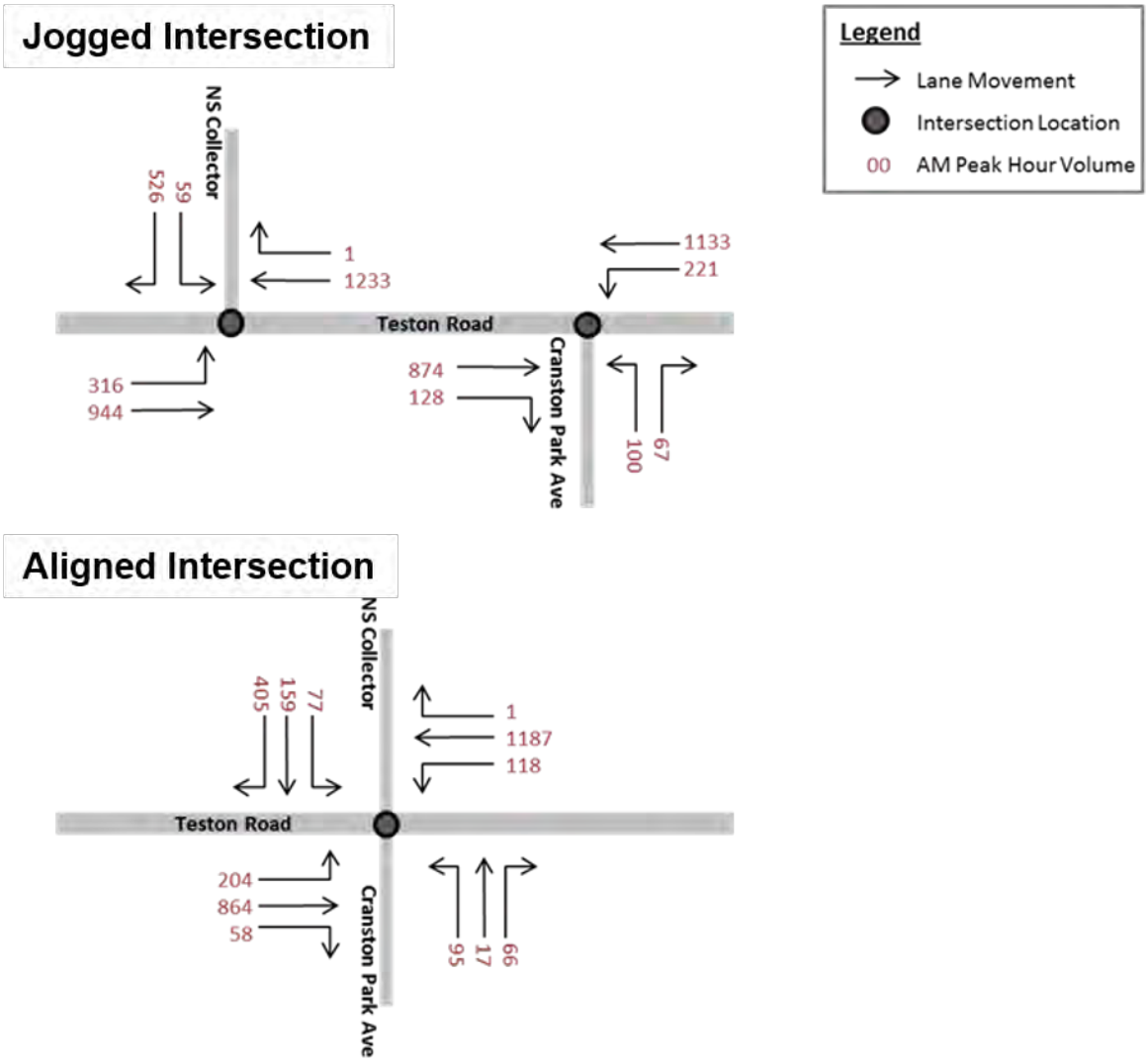

Exhibit 6-3: Cranston Park 2031 AM Traffic Volumes at Teston Road

With a jogged intersection at Teston Road, it appears that the majority of southbound traffic using Street 5 makes a right-turn onto Teston Road (526) versus a left-turn. This is compared to the scenario with the direct connection and it can be seen that there are an estimated 159 trips who utilize the finer grid transportation network to provide connectivity and reduce congestion on the major arterials.

The presence of a watercourse on the north side of the intersection of Cranston Park at Teston Road makes the provision of a direction connection to one of the proposed north-south collector roads in Block 27 challenging. To provide this connection while minimizing watercourse impacts, a conceptual plan to skew the existing Cranston Park intersection slightly was developed, and this is illustrated in **Exhibit 6-4**.

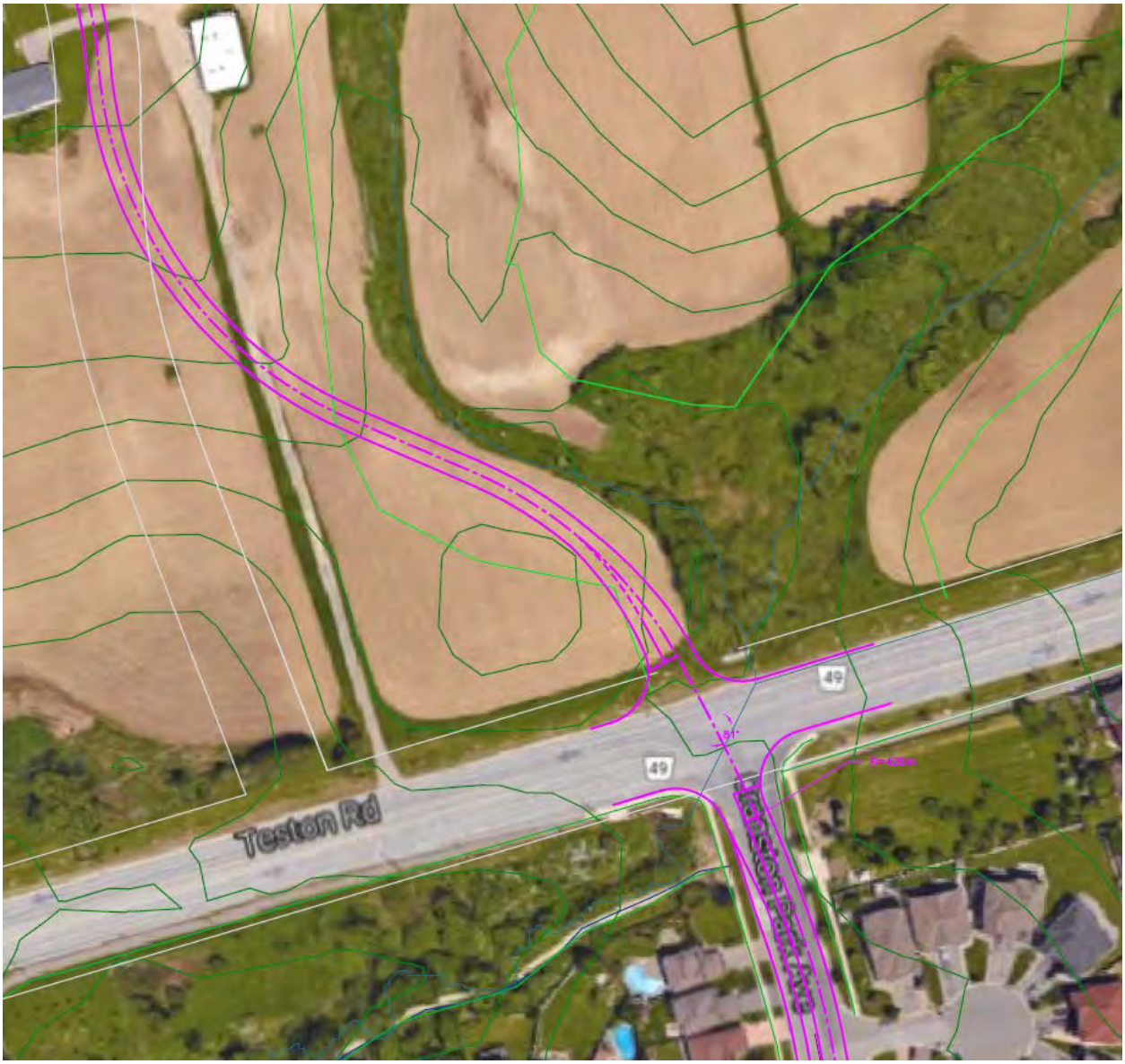

Exhibit 6-4: Cranston Park Avenue Conceptual Intersection Reconfiguration

6.3 Street 6 Crossing of the Natural Heritage Network

Street 6 traverses an environmentally significant area, which, based on field observations and data gathered, is part of a continuous system of terrestrial animal habitat. Although the Street 6 road crossing the Natural Heritage Network is included in the preferred collector network, the significant crossing across terrestrial wildlife habitat warrants a more detailed analysis and evaluation. Hydrological and hydrogeological studies with particular focus on the high water conditions and discharge areas is required along the tributary within this area.

Future traffic by 2031 within Block 27 is estimated based upon the York Region EMME macro-model, modified and updated for the North Vaughan and New Communities TMP, including a refined traffic zone system within Block 27. Two scenarios were tested to assess the impact on internal traffic with and without the Street 6 connection:

1. Option #1: With the proposed Street 6 connection
2. Option #2: Without the Street 6 connection

The traffic projections for these two options are presented in **Exhibit 6-5** and **Exhibit 6-6** respectively, and they are subsequently evaluated based on criteria which will ultimately guide the recommendation of a preferred option.

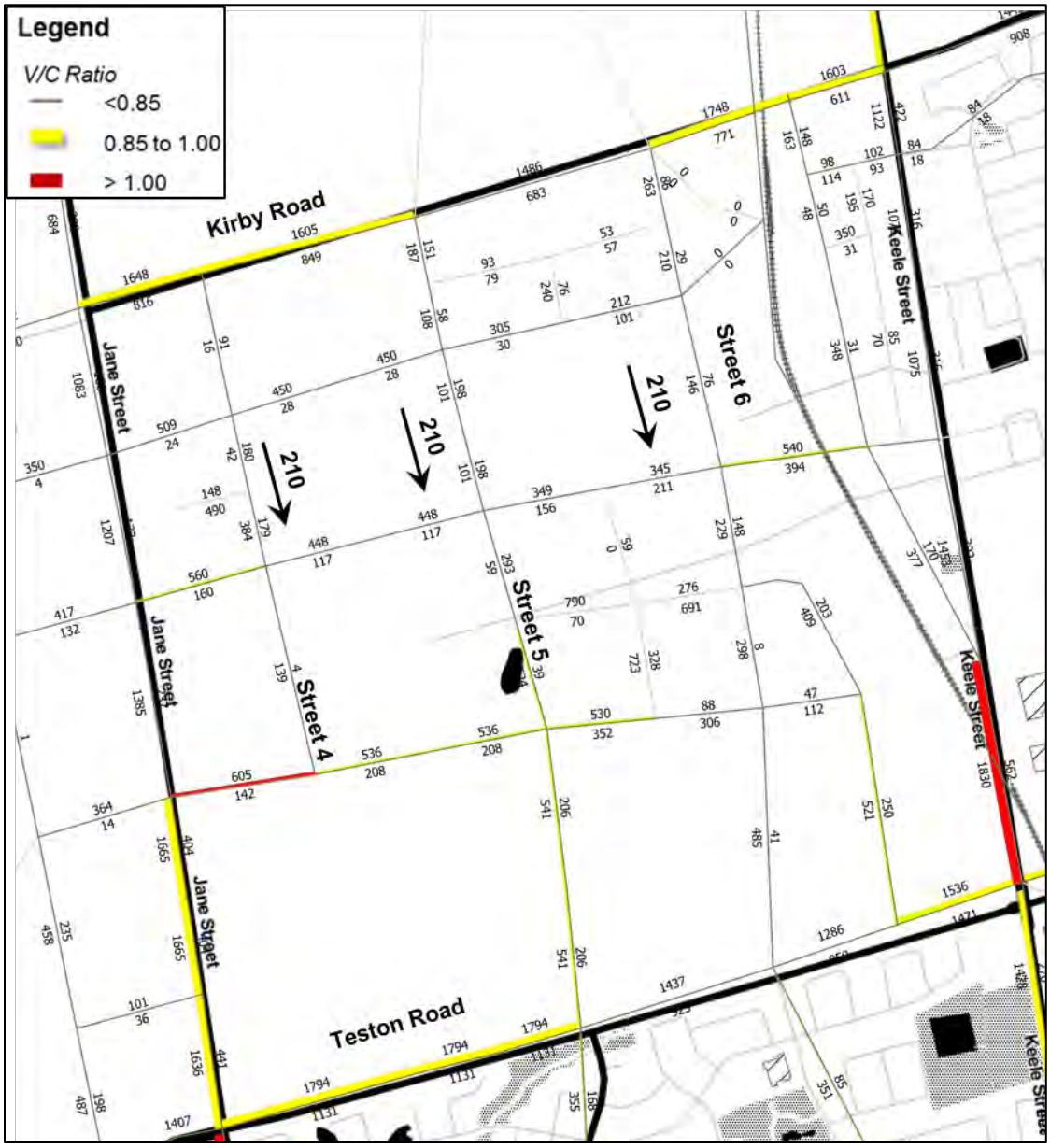

Exhibit 6-5: 2031 AM Peak Hour Traffic Volumes with Street 6 Crossing of NHN

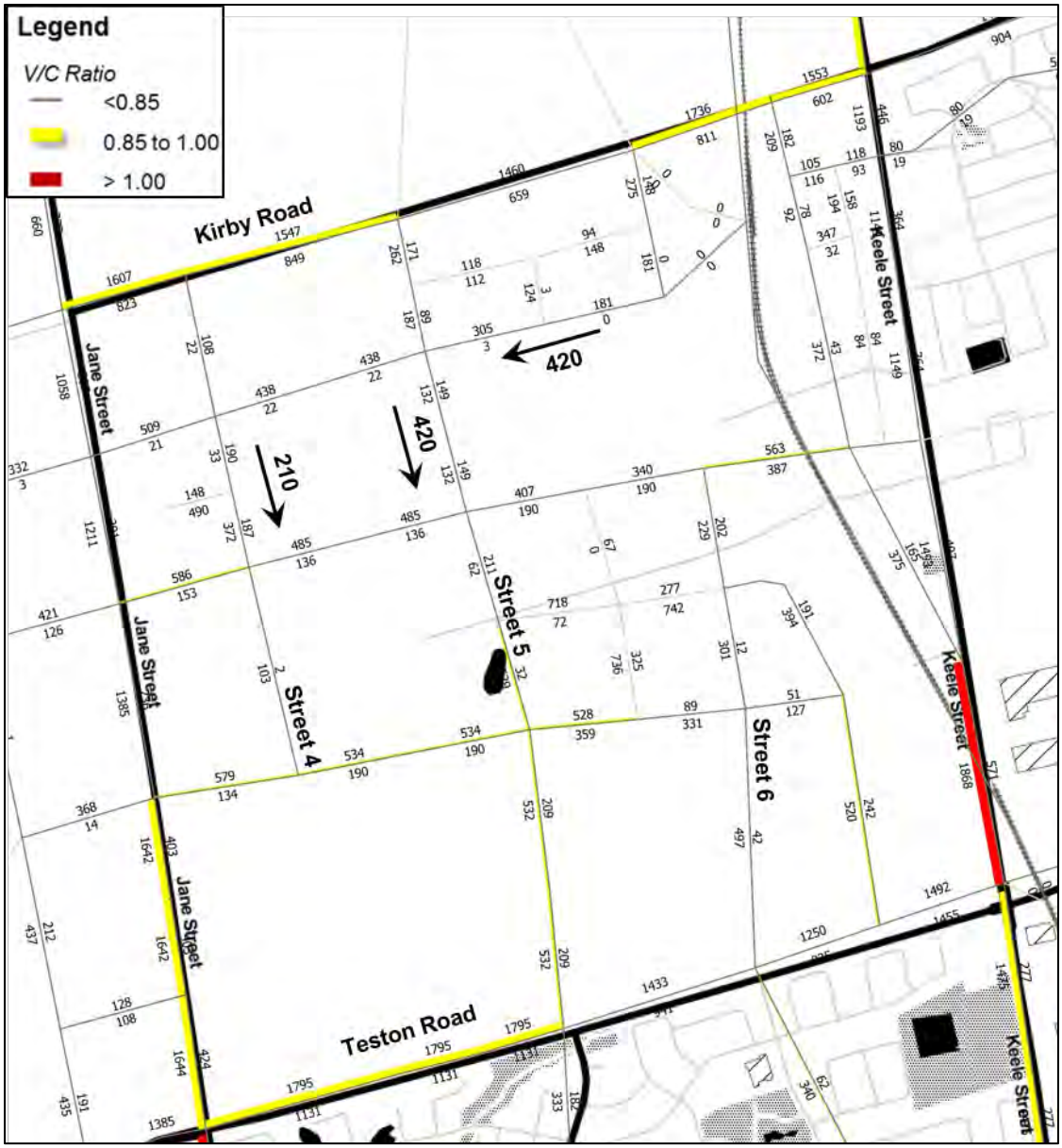

Exhibit 6-6: 2031 AM Peak Hour Traffic Volumes without Street 6 Crossing of NHN

Based on the traffic projections in the background of the plots, there do not *appear* to be any significant differences with respect to traffic capacity internal to the block. While volumes on the Street 6 connection do not exceed 150 vehicles per hour in the peak direction in the traffic model, it is noted that the model is limited in its ability to forecast to a fine level of detail as all traffic is generated by an aggregate zone system as opposed to a micro simulation model.

Based on professional judgement, we would expect traffic to either be more evenly distributed across the north-south collector roads west of the rail tracks (Street 4, 5, and 6), or in fact biased towards Street 4 and 5 based on the actual land use pattern and street network, as opposed to the EMME model plots. As the total screenline volume of those three streets is 630 vehicles, we can *conservatively* expect the traffic volume on Streets 4, 5, and 6 to be closer to

210 vehicles in the AM peak hour, as illustrated with the larger traffic volume numbers in **Exhibit 6-5**. Furthermore, without the Street 6 connection, traffic on Street 5 could actually reach over 400 vehicles per hour in the AM as shown in **Exhibit 6-6**, approaching the typical hourly capacity of a low speed residential collector road and thus resulting in internal congestion and delay within Block 27. In addition it is important to also note that PM peak hour traffic volumes are typically higher with more recreational / shopping type trips being made and thus even higher traffic pressure placed on Street 5 in the PM.

With traffic on Street 5 approaching capacity without the Street 6 connection, the City may need to consider a 4-lane cross-section for Street 5. However this is undesirable as a 4-lane roadway would create a barrier to walking and cycling within the neighbourhood, promote automobile travel at the expense of walking or cycling, and may have other impacts on the natural environment.

Despite the lack of justification from a traffic capacity perspective, an assessment of transportation connectivity for all travel modes provides a stronger case for the construction of the collector road across the NHN:

- Without the connection traffic wishing to use the road would be required to detour approximately 400m west, 600m north or south, and 400m back east, a total of 1.4km. Providing the crossing of the NHN would reduce overall vehicle kilometres travelled by providing a more direct connection.
- Pedestrians and cyclists would also be significantly affected and would also be required to detour, and ultimately become a deterrent to walking and cycling. This is especially impactful due to the Kirby GO station facilities and planned community facilities and intensification identified on the north side of the NHN, so connectivity that includes a comfortable public realm that would promote walking and cycling trips through the NHN would be extremely beneficial.
- Transit routing would not be preferred on this particular north-south roadway under Option #2. While Street 5 would provide a continuous route for YRT transit service, any desire to route transit services on Street 6 spanning Block 27 would not be possible without the connection unless buses divert to Street 5.

The evaluation of the options provided in **Table 3**, and based on this analysis of Option #1 (With NS Collector connection across NHN) and Option #2 (Without NS Collector connection across NHN), ***the preferred alternative is Option #1, with NS Collector connection across NHN)***.

Table 3: Evaluation of Collector Road Options

Criteria	Option #1: With Street 6 Connection	Option 2: Without Street 6 Connection	Preferred Option
Transportation	●	○	Option #1
Natural Environment	○	●	Option #2
Socio-Economic Environment	●	○	Option #1
Implementation	○	●	Option #2
Overall	●	○	**Option #1**

It is recognized that the preferred Option #1 results in potential significant impacts to the natural heritage network. It is thus recommended that the design of Street 6 through the environmental area be modified to be context sensitive in the environmental area to minimize impacts as much as possible, including methods such as minimizing right-of-way and pavement widths, a semi-urban type design, and low-impact drainage methods.

7 Future Kirby GO Station and Kirby Grade Separation

A preliminary feasibility assessment conducted by the NVNCTMP project team shows that it may be challenging to provide access to the lands between the railway crossing and Keele Street along Kirby Road. These lands are potential GO station lands which would benefit from access to both Kirby Road and Keele Street. Furthermore, a grade separation at Kirby Road is recommended due to projected increases in traffic volumes on Kirby Road and Metrolinx plans for Regional Express Rail - all day, two-way GO rail service every 15 minutes.

8 Recommended Road Classifications

Through the NVNCTMP it is recommended that Street 2, Street 5, and Street 8 be designated as Major Collector Roads requiring a 26m right-of-way width, and 14m of paved surface. Street 2 is the only east-west collector road connecting Jane Street to Keele Street through Block 27 and thus should be protected for 4 travel lanes. Street 5 and Street 6 are the only two continuous north-south collector roads - however Street 6 requires a significant crossing through wooded areas and is subject to further study. Street 5 should protect for 4 travel lanes on this basis. Finally Street 8 provides connectivity through Block 27 between the future Kirby GO station and the North Maple Regional Park. Given higher density land uses surrounding the GO station it is recommended to protect for 4 lanes on Street 8 with further consideration for potential transit vehicles as well connecting to the GO station.

The remaining streets identified in the Draft Block 27 plan are minor collector roads.

Appendix A1

Block 27 Ecological Field Work

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Memo

Project No. 1576B

To: **Anna Sicilia, City of Vaughan**

From: **Katharina Richter**

Date: **July 5, 2016**

Re: **Vaughan Block 27 Kirby GO Transit Sub Hub Study Ecological Field Work**

Natural Resource Solutions Inc. (NRSI) was retained by the City of Vaughan in early 2016 to undertake field studies within Block 27. Work included the following:

- Anuran surveys
- Breeding bird surveys
- Aquatic habitat assessments
- Fish community surveys
- Site specific surveys at potential road crossing locations

The field work completed supplements the work completed by Beacon Environmental within the block in 2010 and 2014, as requested by the Ministry of Natural Resources and Forestry (MNRF), the Toronto Region Conservation Authority (TRCA), and the City. As requested by the landowners, staff from Beacon accompanied NRSI biologists on all surveys. This memo briefly describes the results, which are submitted along with this memo.

Anuran Surveys

Evening anuran (frog and toad) call surveys were conducted on April 18, May 25, and June 16, 2016 using the Marsh Monitoring Program protocol (BSC 2009) at up to 21 stations (Map 1a). Monitoring focused on calling frogs and toads during 3 minute call counts, which included call intensity and an estimated number of individuals. Additional information, including survey time, air and water temperature, pH, wind speed, and cloud cover were recorded at each survey station. Station locations were chosen in collaboration with the MNRF. On April 18, anuran stations 001 to 008, and 019 to 021 were monitored by NRSI biologists, as permission was not provided by the landowners to access the southern portion of the block. Biologists from Beacon did walk into the southern portion of the block and will report on those findings themselves. They did mention that they heard no anurans calling within the southern half of the block. They did not, however, conduct formal surveys at all the locations shown on Map 1a. All stations, other than station 018, were surveyed on May 25 and June 16. Water at ANR-018 pools in the field during early spring, but the field was completely dry May 25 and June 16, so was not surveyed. This area is an active agricultural field, planted in soy in 2016.

Results of the anuran surveys are attached, including species recorded and monitoring parameters, such as weather, water temperature, etc.

American Toad (*Anaxyrus americanus*), Tetraploid Gray Treefrog (*Hyla versicolor*), Northern Green Frog (*Lithobates clamitans melanota*), Spring Peeper (*Pseudacris crucifer*), and Wood Frog (*Lithobates sylvatica*) were recorded during the 2016 surveys. Anurans were observed at 11 stations, throughout the block (Figure 1).

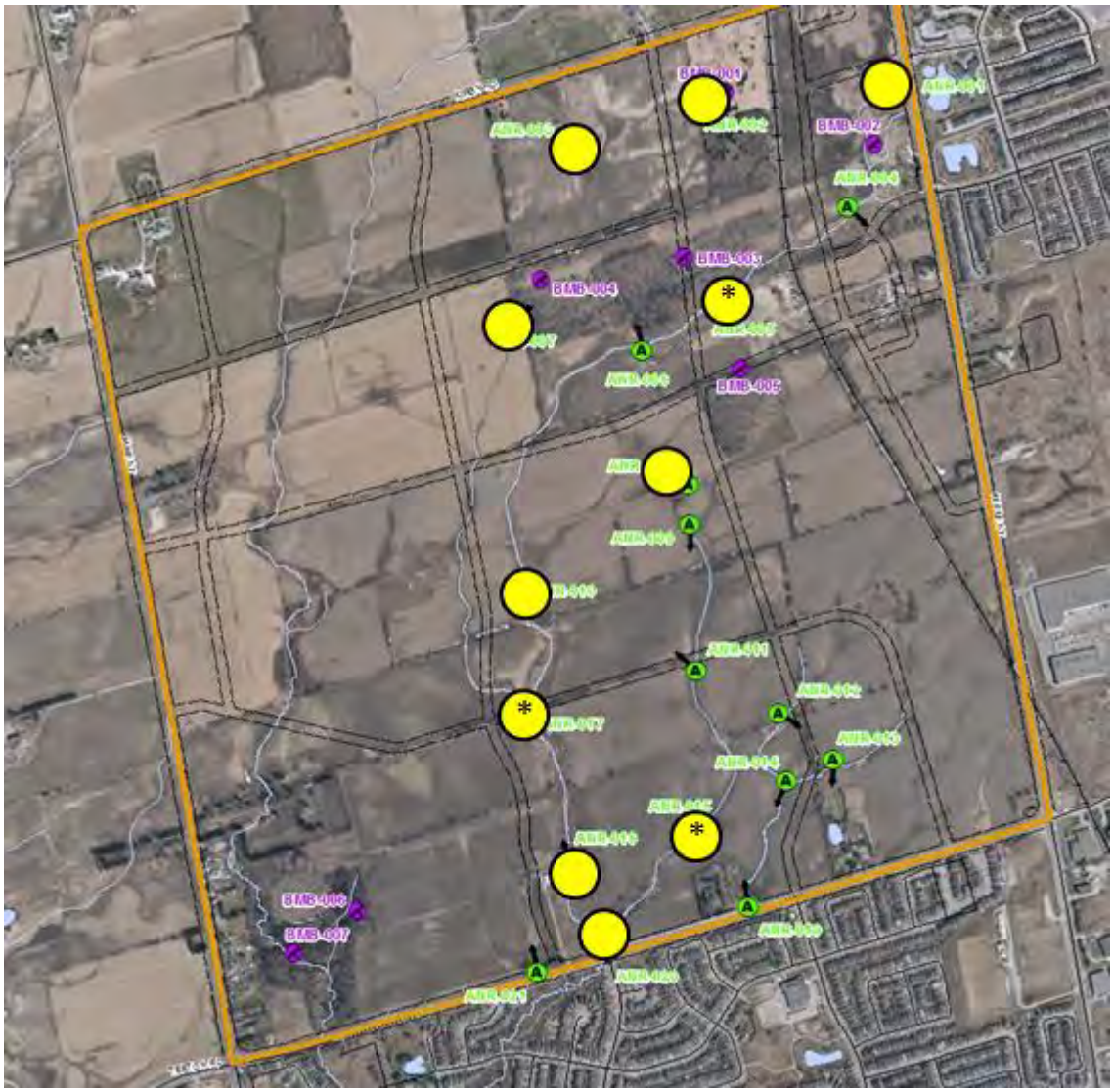

Figure 1. Stations at which anurans were observed
Note: A yellow dot indicates stations at which anurans were observed during surveys. The star indicates stations where anurans were observed outside the point count or outside of the plot.

The pond at ANR-002 (Figure 2) was confirmed as Significant Wildlife Habitat (SWH), specifically Amphibian Breeding Habitat (Woodland), as the pond lies within 120m of a woodland. Full chorus of Grey Treefrog, Spring Peeper, and Wood Frog were recorded from this station. SWH is met by a full chorus of just two of these species. The pond, a 30m radius, connection to the woodland, and 230m of the woodland from the pond are protected as SWH (MNRF 2015).

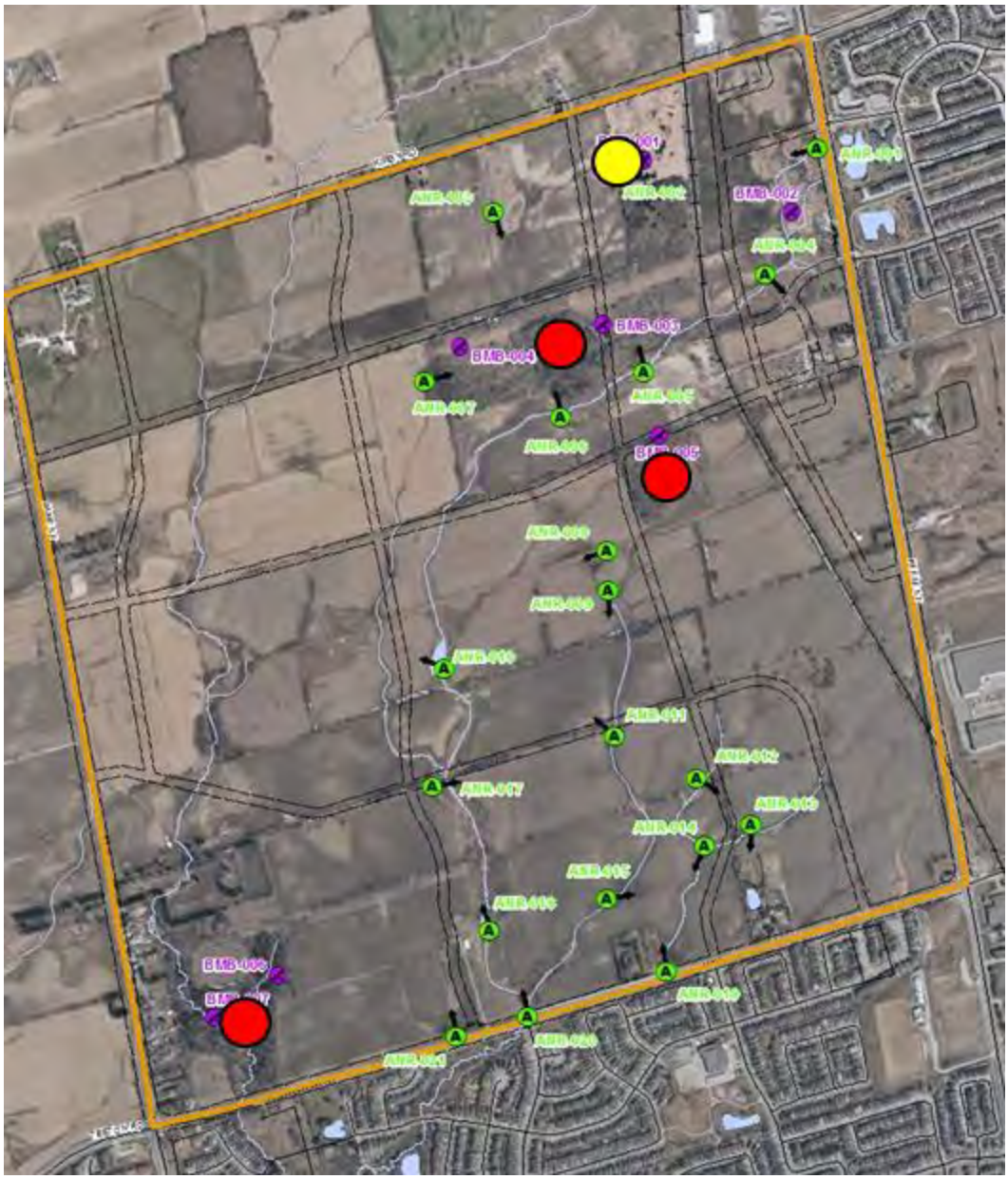

Figure 2. Significant Wildlife Habitat
Yellow – Amphibian Breeding Habitat (Woodland)
Red – Special Concern and Rare Wildlife Species (Eastern Wood-Pewee)

Breeding Bird Surveys

Breeding bird surveys were completed on June 15 and 29, 2016 and data was recorded using standard OBBA call codes (OBBA 2001). Surveys consisted of a combination of 7 point counts and area searches between point count station. Surveys were conducted between dawn and 1000hrs. Point count locations are shown on Map 1a. All visual and auditory observations of birds were recorded, as well as the highest level of breeding evidence exhibited for each recorded species. Station locations were chosen in collaboration with the MNRF.

Results of the breeding bird surveys are attached.

Eastern Wood-Pewee (*Contopus virens*) was recorded singing from several woodlands, as indicated in Figure 2. This species is considered a species of Special Concern in Ontario and Canada. As such, it is defined as a Species of Conservation Concern, and its habitat is considered significant (MNRF 2015). SWH for this species has been indicated on Figure 2. The entire woodland, along with an appropriate buffer, is considered significant because of this species.

Barn Swallow (*Hirundo rustica*) and Bobolink (*Dolichonyx oryzivorus*), are Species at Risk in Ontario (Threatened), and were observed. Bobolink was heard singing in the wheat field at the north of the block, to the north of BMB-004 on June 15. Bobolink was not observed on June 29. NRSI biologists listened and scanned the fields from various locations along Jane Street and Kirby Road adjacent to the pastures on June 29, but no Bobolink were observed. Barn Swallow were observed foraging over the agricultural fields throughout the block during both breeding bird surveys. Although not confirmed, this species is most likely nesting in the various barns and buildings throughout Block 27.

Aquatic Habitat Assessments

Aquatic habitat assessments were undertaken throughout Block 27 on May 17 to 19, 2016. Station locations were chosen in collaboration with the MNRF. In total 29 stations were surveyed, as shown on Map 1b. In order to characterize aquatic habitats, the following information was recorded at each station:

- substrate type;
- channel depth, width, etc.;
- water temperature;
- dissolved oxygen;
- bank stability;
- aquatic vegetation cover; and
- critical life stage areas (i.e. spawning, nursery habitat, etc.).

Results of the aquatic habitat assessments are attached.

Watercourses throughout the block fall into three categories:

- non-waterbodies (ephemeral areas with no sign of permanent flow outside of snow melt and heavy rain events),
- intermittent waterbodies (areas where there are signs of periodic water flow but show some indication that the area dries completely at some point in the year), and
- permanent waterbodies (areas where conditions suggest continuous water flow and continuous fish habitat).

Most non-waterbody areas were observed along the northern extent of each watercourse representing the headwaters of each watercourse in most cases. Some non-waterbody areas may have been intermittent or permanent waterbodies in the past, however due to changes in overland flow patterns and tile draining, no longer contribute to the intermittent and permanent waterbodies in the study area.

Based on the aquatic surveys completed in May 2016, the permanent and intermittent watercourses are shown in red on Figure 3.

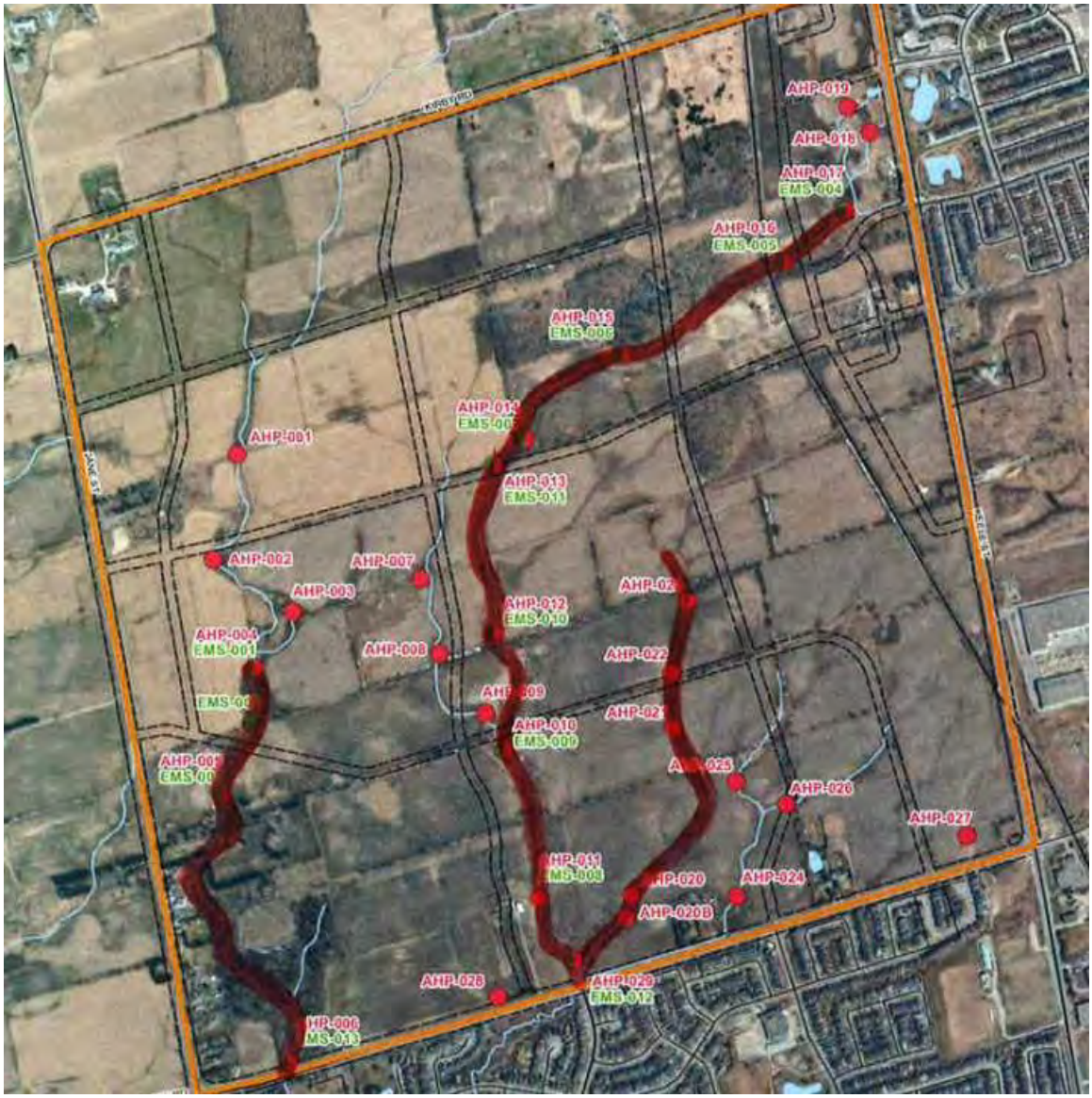

Figure 3. Permanent and Intermittent Watercourses (shown in red)

Fish Community Surveys

Aquatic biologists conducted electrofishing to determine the fish community within aquatic habitats in Block 27 on May 17 and 18, 2016. These surveys were undertaken by a two-person crew using a backpack electrofisher at 13 locations indicated as EMS stations on Map 1b. All areas presenting suitable depth (>0.25m) and suitable connectivity (i.e. not presenting as numerous disconnected pockets over an area >10m) for electrofishing were electrofished. The water conditions during electrofishing, the settings on the electrofisher, and the duration of sampling time are summarized in Table 1. All fish species were identified in the field and returned to the water.

In order to sample fish using electroshocking equipment, a *License to Collect Fish for Scientific Purposes* was obtained from the MNRF. This license was issued to NRSI on April 21, 2016 by the MNRF Aurora District Office (No. 1083054).

Results of the fish community surveys are attached.

The following species were observed: Blacknose Dace (*Rhinichthys atratulus*), Creek Chub (*Semotilus atromaculatus*), Fathead Minnow (*Pimephales promelas*), Johnny Darter (*Etheostoma nigrum*), and White Sucker (*Catostomus commersoni*). These are common species and most prefer cool water. Fathead Minnow and Creek Chub prefer warm, flowing water. The fish were all observed within the central watercourse, known as Kirby Creek. Figure 4 indicates the stations where fish were caught.

Table 1. Electrofishing Conditions, Settings, and Shocking Time

	EMS-001	EMS-002	EMS-003	EMS-004	EMS-005	EMS-006	EMS-007	EMS-008	EMS-009	EMS-010	EMS-011	EMS-012	EMS-013
Date	17-May-16	17-May-16	17-May-16	17-May-16	17-May-16	17-May-16	17-May-16	18-May-16	18-May-16	18-May-16	18-May-16	18-May-16	18-May-16
Sampling start time	11:35	12:10	12:40	14:20	14:45	15:20	15:50	9:00	9:50	10:30	11:25	12:35	14:00
Sampling end time	11:55	12:20	12:55	14:30	15:00	15:45	16:15	9:30	10:15	11:15	11:45	12:45	14:30
Air temperature (°C)	13	13	13	16	16	18	18	13	17	17	18	18	16
Water temperature (°C)	13.4	11.1	14.8	13.4	14.2	17.4	21.6	8.3	8.4	8.4	17.4	13.2	14.3
Conductivity (µs/cm)	860	710	710	281	281	286	231	1280	2650	270	2840	1740	650
Dissolved Oxygen (ppm)	7.45 71.4%	6.48 67.2%	9.78 96.9%	6.49 64.0%	8.75 85.4%	9.48 92.8%	8.48 91.5%	8.45 74.5%	8.54 78.5%	10.32 98.3%	7.64 78.9%	8.74 98.4%	8.49 78.4%
Number of Netters	1	1	1	1	1	1	1	1	1	1	1	1	1
Voltage (V)	100	150	150	100	100	100	100	150	100	100	100	150	150
Pulsating Frequency (Hz)	60	60	60	60	60	60	60	60	60	60	60	60	60
Shocking time (sec)	206	366	218	111	290	163	231	305	209	215	215	303	232

Figure 4. Stations where fish were observed

Site Specific Surveys at Potential Road Crossing Locations

NRSI biologists surveyed areas in the field where major roads through the block are proposed, according the the most recent land use plan. Areas where the proposed roads intersected, or are in close proximity to natural heritage features, including woodlands, hedgerows, and wetlands, were surveyed. These surveys took place on May 17 and 18, 2016. Several recommendations are made with regards to realignments that should be considered in order to avoid impact to the natural environment, most notably woodlands. These are identified on maps, submitted separately.

References

Ontario Ministry of Natural Resources and Forestry (MNRF). 2015. Significant Wildlife Habitat Schedules for Ecoregion 7E. January 2015.

Results

Anuran Surveys

Breeding Bird Surveys

Aquatic Surveys

Vaughan Block 27
Anuran Call Survey Results

Station	Date	American Toad	Spring Peeper	Tetraploid Gray Treefrog	Northern Green Frog	Wood Frog	*Incidental Observations*
1	April 18	2(3)	1(1)	-	-	2(8)	
	May 25	-	-	-	1(5)	-	
	June 16	-	-	1(1)	1(2)	-	
2	April 18	-	3	-	-	3	
	May 25	1(1)	1(2)	3	-	-	Green Frog 1(2) heard and observed after point count; hundreds of American Toad tadpoles
	June 16	2(2)	-	2(15)	1(1)	-	
3	April 18	-	-	-	-	1(1)	
	May 25	-	-	1(1)	-	-	Spring Peeper heard outside plot radius; likely Green Frog tadpole observed in pond
	June 16	-	-	1(3)	-	-	
4	April 18	-	-	-	-	-	
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	
5	April 18	-	-	-	-	-	
	May 25	-	-	-	-	-	American Toad (1) and Green Frog (1) observed near plot prior to count.
	June 16	-	-	-	-	-	
6	April 18	-	-	-	-	-	
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	
7	April 18	2(3)	-	-	-	2(5)	
	May 25	-	-	1(1)	-	-	American Toad observed in field and heard to SE.
	June 16	-	-	-	-	-	
8	April 18	2(2)	-	-	-	1(4)	
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	
9	April 18	-	-	-	-	-	
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	
10	April 18	-	-	-	-	-	
	May 25	1(3)	-	-	1(1)	-	2 additional American Toad calling after point count
	June 16	-	-	1(2)	-	-	Gray Treefrog 1(2) outside plot radius
11	April 18	-	-	-	-	-	
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	
12	April 18	Permission to access not provided.					
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	
13	April 18	Permission to access not provided.					
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	
14	April 18	Permission to access not provided.					
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	
15	April 18	Permission to access not provided.					
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	Spring Peeper 1(2) outside of plot radius
16	April 18	Permission to access not provided.					
	May 25	1(3)	-	-	-	-	Green Frog 1(1) heard in plot after point count
	June 16	-	-	-	1(3)	-	Spring Peeper 1(1) outside of plot radius
17	April 18	Permission to access not provided.					
	May 25	-	-	-	-	-	American Toad 1(1) outside of plot radius
	June 16	-	-	-	-	-	Gray Treefrog 1(2) outside plot radius
18	April 18	Permission to access not provided.					
	May 25	No water. Did not survey.					
	June 16	No water. Did not survey.					
19	April 18	-	-	-	-	-	
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	
20	April 18	-	-	-	-	-	
	May 25	-	-	-	-	-	
	June 16	-	1(1)	-	-	-	
21	April 18	-	-	-	-	-	
	May 25	-	-	-	-	-	
	June 16	-	-	-	-	-	

	pH			Water temp		
Monitoring Station	**April 18**	**May 25**	**June**	**April 18**	**May 25**	**June**
1	8.4	7.5	9.7	15.8	21.4	19.1
2	8.3	7.3	10.0	16.1	21.7	17.0
3	8.5	7.6	10.4	15.4	21.3	20.0
4	8.7	7.6	10.2	10.3	16.9	16.0
5	8.6	7.4	NA	12.8	17.3	NA
6	8.7	7.5	NA	13.4	20.8	NA
7	8.3	NA	NA	14.3	NA	NA
8	8.9	NA	NA	11.4	NA	NA
9	NA	NA	NA	NA	NA	NA
10	NA	7.4	NA	NA	19.5	NA
11		NA	NA		NA	NA
12		NA	7.8		NA	13.6
13		NA	NA		NA	NA
14		NA	NA		NA	NA
15		NA	NA		NA	NA
16		7.1	7.8		17.1	17.1
17		7.2	NA		16.0	NA
18		NA	NA		NA	NA
19		NA	NA		NA	NA
20		7.1	7.6		15.8	8.0
21		NA	7.5		NA	12.1

Other weather details:	**Cloud Cover**	**Air Temp**	**Wind Speed**	**Precipitation**
April 18	40-80%	10-12	2-4	None- slight drizzle
May 25	0-40%	17-22	0-1	None
June 16	15-30%	16-19	0-1	None

NA: (Not Applicable) denotes lack of water

Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	OMNR[2]	COSEWIC[3]	SARA Schedule[4]	TRCA Status[5]	PIF Priority Species BCR 13		OBBA		Beacon 2014	Beacon 2015	Vertolli 2014	NRSI 2015	NRSI BMB Station 2016							
							Habitat	Objective	17PJ15	17PJ16					1	2	3	4	5	6	7	Area Search
Anatidae	**Ducks, Geese & Swans**																					
Branta canadensis	Canada Goose	S5				L5			CO	CO		NB	X							X		X
Cygnus buccinator	Trumpeter Swan	S4	NAR	NAR		L+			CO	CO												
Aix sponsa	Wood Duck	S5				L4			CO	CO												
Anas strepera	Gadwall	S4				L4				CO												
Anas platyrhynchos	Mallard	S5				L5			CO	CO	X	X	B	X								CO
Anas discors	Blue-winged Teal	S4				L2			PO	CO												
Anas clypeata	Northern Shoveler	S4								PR												
Anas crecca	Green-winged Teal	S4				L2				CO												
Lophodytes cucullatus	Hooded Merganser	S5B, S5N				L3			PR	CO												
Oxyura jamaicensis	Ruddy Duck	S4B, S4N								PR												
Phasianidae	**Partridges, Grouse & Turkeys**																					
Bonasa umbellus	Ruffed Grouse	S4				L2			CO	CO			R									
Meleagris gallopavo	Wild Turkey	S5				L3			CO	CO			X	X								PO
Podicipediformes	**Grebes**																					
Podilymbus podiceps	Pied-billed Grebe	S4B, S4N				L3			CO	CO												
Ardeidae	**Herons & Bitterns**																					
Botaurus lentiginosus	American Bittern	S4B				L2			PO	PR												
Ardea herodias	Great Blue Heron	S4B				L3			CO	CO	NB		X									X
Butorides virescens	Green Heron	S4B				L4			CO	PR			X									
Cathartidae	**Vultures**																					
Cathartes aura	Turkey Vulture	S5B				L4			CO	PR	NB		X	X								X
Accipitridae	**Hawks, Kites, Eagles & Allies**																					
Pandion haliaetus	Osprey	S5B				L3				CO			B									
Circus cyaneus	Northern Harrier	S4B	NAR	NAR		L3	Grassland / Agriculture	Maintain Current	CO	PR												
Accipiter striatus	Sharp-shinned Hawk	S5	NAR			L3			CO	PR			B									
Accipiter cooperii	Cooper's Hawk	S4	NAR	NAR		L4			CO	CO			B									PO
Accipiter gentilis	Northern Goshawk	S4	NAR	NAR		L2				CO												
Buteo lineatus	Red-shouldered Hawk	S4B	NAR	NAR	Schedule 3	L2	Forest	Assess Status		PR												
Buteo platypterus	Broad-winged Hawk	S5B				L2			PO	PR												
Buteo jamaicensis	Red-tailed Hawk	S5	NAR	NAR		L5			CO	CO	X	X	B						PR			PO
Rallidae	**Rails, Gallinules & Coots**																					
Rallus limicola	Virginia Rail	S5B				L3			PR	PR												
Porzana carolina	Sora	S4B				L3			CO	PR												CO
Fulica americana	American Coot	S4B	NAR	NAR		L2				PO												
Charadriidae	**Plovers**																					
Charadrius vociferus	Killdeer	S5B, S5N				L5			CO	CO	X	X	B		PO					PO		PO
Scolopacidae	**Sandpipers, Phalaropes & Allies**																					
Actitis macularia	Spotted Sandpiper	S5				L4			CO	PR	X	X			PO							
Gallinago delicata	Wilson's Snipe	S5B				L3			PO													
Scolopax minor	American Woodcock	S4B				L3			CO	PR												
Laridae	**Gulls, Terns & Skimmers**																					
Larus delawarensis	Ring-billed Gull	S5B, S4N				L4					NB	NB	X				X	X	X		X	X
Larus argentatus	Herring Gull	S5B, S5N				L3							X									
Columbidae	**Pigeons & Doves**																					
Columba livia	Rock Pigeon	SNA				L+			CO	CO	X	X				X						
Zenaida macroura	Mourning Dove	S5				L5			CO	CO	X	X	B	X		PR					PO	PO
Cuculiformes	**Cuckoos & Anis**																					
Coccyzus americanus	Yellow-billed Cuckoo	S4B				L3			PO	CO												
Coccyzus erythropthalmus	Black-billed Cuckoo	S5B				L3	Shrub / Successional	Halt Decline	CO	CO			X									
Strigidae	**Typical Owls**																					
Megascops asio	Eastern Screech-Owl	S4	NAR	NAR		L4			PR	CO			R									
Bubo virgianus	Great Horned Owl	S4				L4			CO	CO			X									
Strix varia	Barred Owl	S5				L2				PR			X									
Strix nebulosa	Great Gray Owl	S4	NAR	NAR									R									
Asio otus	Long-eared Owl	S4				L3							R									
Aegolius acadicus	Northern Saw-whet Owl	S4				L3				PR			M									
Caprimulgidae	**Goatsuckers**																					
Chordeiles minor	Common Nighthawk	S4B	SC	T	Schedule 1	L3			PO				X									

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							Habitat	Objective	17PJ15	17PJ16					1	2	3	4	5	6	7	Area Search
Apodidae	**Swifts**																					
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T	Schedule 1	L4	Other Habitats	Reverse Decline	CO	PR												
Trochilidae	**Hummingbirds**																					
Archilochus colubris	Ruby-throated Hummingbird	S5B				L4			PR	CO			B									
Alcedinidae	**Kingfishers**																					
Megaceryle alcyon	Belted Kingfisher	S4B				L4	Other Habitats	Reverse Decline	CO	CO												
Picidae	**Woodpeckers**																					
Melanerpes erythrocephalus	Red-headed Woodpecker	S4B	SC	T	Schedule 1	L3	Forest	Reverse Decline	CO	CO												
Melanerpes carolinus	Red-bellied Woodpecker	S4				L4							M		PO							PO
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B				L3				CO			M									
Picoides pubescens	Downy Woodpecker	S5				L5			CO	CO	X	X	B	X								PO
Picoides villosus	Hairy Woodpecker	S5				L4			CO	CO	X		B				PO		PO		PO	PO
Colaptes auratus	Northern Flicker	S4B				L4	Forest	Reverse Decline	CO	CO	X	X	B	X			PO		PO			PO
Dryocopus pileatus	Pileated Woodpecker	S5				L3			CO	CO			X									
Falconidae	**Caracaras & Falcons**																					
Falco sparverius	American Kestrel	S4				L4	Grassland / Agriculture	Halt Decline	CO	PR			X									
Tyrannidae	**Tyrant Flycathers**																					
Contopus cooperi	Olive-sided Flycatcher	S4B	SC	T	Schedule 1	L2							X									
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC		L4	Forest	Reverse Decline	CO	CO	X	X	B	X			PR		PR	PO	PR	PO
Empidonax virescens	Acadian Flycatcher	S2S3B	END	E	Schedule 1	L3	Forest	Recovery		PR												
Empidonax alnorum	Alder Flycatcher	S5B				L4			PO	PR												
Empidonax traillii	Willow Flycatcher	S5B				L4	Shrub / Successional	Maintain Current	CO	CO	X	X										
Empidonax minimus	Least Flycatcher	S4B				L4			PR	PO			M									
Sayornis phoebe	Eastern Phoebe	S5B				L5			CO	CO	X		B								PO	PO
Myiarchus crinitus	Great Crested Flycatcher	S4B				L4			PR	CO	X	X	B				PO		PO	PO	PO	PO
Tyrannus tyrannus	Eastern Kingbird	S4B				L4	Grassland / Agriculture	Halt Decline	CO	CO	X	X	B									PO
Vireonidae	**Vireos**																					
Vireo flavifrons	Yellow-throated Vireo	S4B				L3				PR												
Vireo solitarius	Blue-headed Vireo	S5B				L3				PR			M									
Vireo gilvis	Warbling Vireo	S5B				L5			PR	PR	X	X	X									PO
Vireo philadelphicus	Philadelphia Vireo	S5B											M									
Vireo olivaceus	Red-eyed Vireo	S5B				L4			CO	CO	X	X	B				PR	PR	PR	PO	PO	PO
Corvidae	**Crows & Jays**																					
Cyanocitta cristata	Blue Jay	S5				L5			CO	CO	X	X	X					PO		PO	PO	PO
Corvus brachyrhynchos	American Crow	S5B				L5			CO	CO	X	X	X	X	PO		PO	PR	PR	PO		PR
Corvus corax	Common Raven	S5				L3								X								
Alaudidae	**Larks**																					
Eremophila alpestris	Horned Lark	S5B				L4			PO	CO	X	X										
Hirundinidae	**Swallows**																					
Tachycineta bicolor	Tree Swallow	S4B				L4			CO	CO	X	X			PO							PO
Stelgidopteryx serripennis	Northern Rough-winged Swallow	S4B				L4			CO	PR		X										
Riparia riparia	Bank Swallow	S4B	THR	T		L4	Other Habitats	Reverse Decline	CO	PR												
Petrochelidon pyrrhonota	Cliff Swallow	S4B				L4			CO	CO												
Hirundo rustica	Barn Swallow	S4B	THR	T		L4			CO	CO	X	X	X	X	X	PO		X				PR
Paridae	**Chickadees & Titmice**																					
Poecile atricapillus	Black-capped Chickadee	S5				L5			CO	CO	X	X	B		PO		PR	PO	PR	PO		PO
Sittidae	**Nuthatches**																					
Sitta canadensis	Red-breasted Nuthatch	S5				L4			CO	CO			B				PO					
Sitta carolinensis	White-breasted Nuthatch	S5				L4			CO	CO	X	X	B	X							PO	PO
Certhiidae	**Creepers**																					
Certhia americana	Brown Creeper	S5B				L3			PR	CO			X									
Troglodytidae	**Wrens**																					
Thryothorus ludovicianus	Carolina Wren	S4				L4				PO												
Troglodytes aedon	House Wren	S5B				L5			CO	CO	X	X	B			PO		PO		PO		PO
Troglodytes hiemalis	Winter Wren	S5B				L3			PR	CO												
Cistothorus platensis	Sedge Wren	S4B	NAR	NAR		L3			PR													
Cistothorus palustris	Marsh Wren	S4B				L3			PR	PR												

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							Habitat	Objective	17PJ15	17PJ16					1	2	3	4	5	6	7	Area Search
Regulidae	**Kinglets**																					
Regulus satrapa	Golden-crowned Kinglet	S5B				L3			PO	PO			M									
Regulus calendula	Ruby-crowned Kinglet	S4B											M									
Polioptilidae	**Gnatcatchers**																					
Polioptila caerulea	Blue-gray Gnatcatcher	S4B				L4			CO													
Turdidae	**Thrushes**																					
Sialia sialis	Eastern Bluebird	S5B	NAR	NAR		L4			CO	CO			R									
Catharus fuscescens	Veery	S4B				L3			PO	PR												
Catharus ustulatus	Swainson's Thrush	S4B											R									
Catharus guttatus	Hermit Thrush	S5B				L3			PO	PR			M									
Hylocichla mustelina	Wood Thrush	S4B	SC	T		L3	Forest	Maintain Current	CO	CO			B									
Turdus migratorius	American Robin	S5B				L5			CO	CO	X	X	B	X		PR		PO	PO	PO	PO	CO
Mimidae	**Mockingbirds, Thrashers & Allies**																					
Dumetella carolinensis	Gray Catbird	S4B				L4			CO	CO	X	X	B					PO		PO		PO
Toxostoma rufum	Brown Thrasher	S4B				L3	Shrub / Successional	Halt Decline	CO	PR	X	X	B									
Mimus polyglottos	Northern Mockingbird	S4				L5			CO	PR	X		R									
Sturnidae	**Starlings**																					
Sturnus vulgaris	European Starling	SNA				L+			CO	CO	X	X	X	X	CO	PO			PO			PO
Bombycillidae	**Waxwings**																					
Bombycilla cedrorum	Cedar Waxwing	S5B				L5			CO	CO	X	X	X		PR	PO		PR	PO	PO	PO	PO
Parulidae	**Wood Warblers**																					
Seiurus aurocapillus	Ovenbird	S4B				L3			PR	CO			B									
Parkesia noveboracensis	Northern Waterthrush	S5B				L3			PO	PR			B									
Vermivora chrysoptera	Golden-winged Warbler	S4B	SC	T	Schedule 1	L2	Shrub / Successional	Maintain Current		PR												
Vermivora cyanoptera	Blue-winged Warbler	S4B				L2	Shrub / Successional	Maintain Current	PR	CO												
Mniotilta varia	Black-and-white Warbler	S5B				L2			PO	PR			B									
Oreothlypis peregrina	Tennessee Warbler	S5B									NB											
Oreothlypis ruficapilla	Nashville Warbler	S5B				L3			PO	PR			B									
Geothylpis philadelphia	Mourning Warbler	S4B				L3			CO	CO	X	X										
Geothylpis trichas	Common Yellowthroat	S5B				L4			CO	CO	X	X	B	X				PR	PO			PO
Setophaga citrina	Hooded Warbler	S3B	SC	NAR	Schedule 1	L3	Forest	Recovery		CO												
Setophaga ruticilla	American Redstart	S5B				L4			CO	CO	X	X	B									
Setophaga tigrina	Cape May Warbler	S5B											R									
Setophaga cerulea	Cerulean Warbler	S3B	THR	E	Schedule 1	LX	Forest	Assess Status		PR												
Setophaga magnolia	Magnolia Warbler	S5B				L3			PR	PO			B									
Setophaga castanea	Bay-breasted Warbler	S5B											M									
Setophaga fusca	Blackburnian Warbler	S5B				L3			PR	PR			M									
Setophaga petechia	Yellow Warbler	S5B				L5			CO	CO	X	X	M	X		PO						PO
Setophaga pensylvanica	Chestnut-sided Warbler	S5B				L3			PR	CO		X	B									
Setophaga striata	Blackpoll Warbler	S4B											R									
Setophaga caerulescens	Black-throated Blue Warbler	S5B				L3				PR			M									
Setophaga palmarum	Palm Warbler	SNRB											M									
Setophaga pinus	Pine Warbler	S5B				L3			CO	CO	X		B									PO
Setophaga coronata	Yellow-rumped Warbler	S5B				L3				PO			B									
Setophaga virens	Black-throated Green Warbler	S5B				L3			PO	CO			M									
Cardellina canadensis	Canada Warbler	S4B	SC	T	Schedule 1	L2	Forest	Reverse Decline		CO			M									
Cardellina pusilla	Wilson's Warbler	S4B											M									
Emberizidae	**New World Sparrows & Allies**																					
Pipilo erythrophthalmus	Eastern Towhee	S4B				L3	Shrub / Successional	Halt Decline	PO	PR												
Spizella passerina	Chipping Sparrow	S5B				L5			CO	CO	X	X	B									PO
Spizella pallida	Clay-colored Sparrow	S4B				L3			PR	PO												
Spizella pusilla	Field Sparrow	S4B				L4	Shrub / Successional	Halt Decline	CO	CO	X	X	B							PO		PO
Pooecetes gramineus	Vesper Sparrow	S4B				L3	Grassland / Agriculture	Halt Decline	PO	PR	X	X										
Passerculus sandwichensis	Savannah Sparrow	S4B				L4	Grassland / Agriculture	Halt Decline	CO	CO	X	X		X								PO
Ammodramus savannarum	Grasshopper Sparrow	S4B				L2	Grassland / Agriculture	Halt Decline	CO													
Melospiza melodia	Song Sparrow	S5B				L5			CO	CO	X	X	B	X	PR	CO	PR	PR	PR	PO		PO
Melospiza georgiana	Swamp Sparrow	S5B				L4			PO	CO		X	M									
Zonotrichia albicollis	White-throated Sparrow	S5B				L3				PR			M									
Zonotrichia leucophrys	White-crowned Sparrow	S4B											M									
Junco hyemalis	Dark-eyed Junco	S5B											X									
Cardinalidae	**Cardinals, Grosbeaks & Allies**																					
Piranga olivacea	Scarlet Tanager	S4B				L3			PR	CO			M									
Cardinalis cardinalis	Northern Cardinal	S5				L5			CO	CO	X	X	B	X	PO		PR			PR	PO	PO
Pheucticus ludovicianus	Rose-breasted Grosbeak	S4B				L4	Forest	Maintain Current	CO	CO	X	X	B						PO			
Passerina cyanea	Indigo Bunting	S4B				L4			CO	CO	X	X	B			PO	PR	PR	PR	PO		PR

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							Habitat	Objective	17PJ15	17PJ16					1	2	3	4	5	6	7	Area Search
Icteridae	**Blackbirds**																					
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	No Schedule	L3	Grassland / Agriculture	Halt Decline	CO	CO		X					PO					
Agelaius phoeniceus	Red-winged Blackbird	S4				L5			CO	CO	X	X	B	X	CO	PR		PO		PR		PR
Sturnella magna	Eastern Meadowlark	S4B	THR	T		L4	Grassland / Agriculture	Halt Decline	CO	PR												
Quiscalus quiscula	Common Grackle	S5B				L5			CO	CO	X	X	X		PO	PO		PR				PR
Molothrus ater	Brown-headed Cowbird	S4B				L5			PR	CO	X	X	X			PO		PO		PO		PO
Icterus spurius	Orchard Oriole	S4B				L5			CO				M									
Icterus galbula	Baltimore Oriole	S4B				L5	Other Habitats	Reverse Decline	CO	CO	X	X	B			PO		PO			PO	PO
Fringillidae	**Finches & Allies**																					
Carpodacus mexicanus	House Finch	SNA				L+			CO	CO	X	X										
Carpodacus purpureus	Purple Finch	S4B				L4				PO			R									
Spinus pinus	Pine Siskin	S4B				L4				PR			R									
Spinus tristis	American Goldfinch	S5B				L5			CO	CO	X	X	B	X	PR	PR	PR	PR	PR	PR	PO	PO
Passeridae	**Old World Sparrows**																					
Passer domesticus	House Sparrow	SNA				L+			CO	CO												
					Total	**142**			**114**	**132**	**53**	**51**	**100**	**20**	**14**	**15**	**14**	**18**	**17**	**19**	**14**	**46**

[1]OMNR 2013a; [2]OMNR 2013b; [3]COSEWIC 2012; [4]Government of Canada 2012; [5]Toronto Region Conservation Authority 2008

LEGEND	
SRANK	**Vertolli 2014**
S1 Critically Imperiled	B Breeding
S2 Imperiled	X Observed with no breeding evidence
S3 Vulnerable	M Migrant
S4 Apparently Secure	R Rare in Block 27
S5 Secure	**Beacon 2014, 2015**
SU Unrankable	X Present
SNA Unranked	NB Non-breeding
SX Presumed Extirpated	**OBBA**
SH Possibly Extirpated (Historical)	CO Confirmed
S#? Rank Uncertain	PR Probable
COSSARO	PO Possible
END Endangered	**NRSI 2015**
THR Threatened	
SC Special Concern	X Present (Observed June 22 or August 6, 2015)
NAR Not at Risk	
DD Data Deficient	
EXP Extirpated	
COSEWIC	
E Endangered	
T Threatened	
SC Special Concern	
NAR Not at Risk	
DD Data Deficient	
XT Extirpated	
SARA Schedule	
Schedule 1 Officially Protected under SARA	

Aquatic Habitat Assessments

NRSI Reach References	Survey Date and Time	Approximate Reach Length (m)	Riparian Zone		Canopy		Channel Morphology							Fish Cover**	Instream Vegetation	Substrate (%)	Groundwater evidence	Air Temp. ()	Water Temp. ()	Other
			Vegetation Type*	Vegetation Density	Canopy Type	Quality and % Shade of Canopy	Wetted Width (m)	Bankfull Width (m)	Bank Height (m)	Bank Slope (°)	Gradient	Meander or Straight	Bank Stability							
AHP 001	May 17, 2016 10:15 hrs	30	Terrestrial grasses, corn field	High	Grasses	Poor 70%	N/A	N/A	N/A	N/A	Moderate	Meander	High	None	None	Clay (30) Silt (45) Sand (25)	None	11	N/A	No channel, signs of erosion in past, isolated standing puddles
AHP 002	May 17, 2016 10:30 hrs	30	Terrestrial grasses, corn field, red-osier dogwood	High	Grasses	Poor 70%	N/A	N/A	N/A	N/A	Moderate	Meander	High	Limited: IV	Broad-leaved cattail	Clay (45) Silt (55)	None	13	N/A	No defined channel, dense band of terrestrial vegetation, max. water depth 3 cm (standing pool)
AHP 003	May 17, 2016 11:10 hrs	30	Terrestrial Grasses, broad-leaved cattail, red-osier dogwood	High	Grasses	Poor 70%	N/A	N/A	N/A	N/A	Moderate	Meander	High	Limited: IV	Broad-leaved cattail	Clay (45) Silt (55)	Watercress	13	14	No defined channel, dense band of terrestrial vegetation, max. water depth 3 cm (standing pool)
AHP 004	May 17, 2016 11:35 hrs	30	Terrestrial grasses, broad-leaved cattail, red-osier dogwood, herbaceous species	Moderate	Mature deciduous trees along east bank	Good 90%	0.62 - 0.95	0.72 - 1.00	0.3	90-170	Low	Meander	Moderate	Limited: WD, IV	None	Clay (25) Silt (55) Detritus (20)	Jewelweed upstream and iron staining	13	13.4	No fish observed
AHP 005	May 17, 2016 12:40 hrs	20	Terrestrial grasses, raspberry sp.	Moderate	Mature deciduous trees	Fair 50%	0.6 - 1.24	1.7 - 4.8	0.62	90	Moderate	Meander	High	Limited to Moderate: PL, UB, IV	None	Clay (40) Silt (30) Sand (20) Gravel (10)	None	13	14.8	Significant rain previous night, average water depth 0.15 m
AHP 006	May 18, 2016 14:00 hrs	30	Deciduous forest with dense phragmites sp. near road	High	Deciduous trees	Good 85%	1.4 - 2.45	8 - 10.5	0.75 - 1.5	160	Moderate	Meander	High	Moderate: PL, RF, UB, WD, IV, CB	Isolated patches of watercress, phragmites sp. along eastern bank	Silt (10) Sand (20) Gravel (25) Cobble (40) Detritus (5)	Watercress, iron staining and spotted jewel weed	16	14.3	Small meandering channel, patches of filamentous algae encrusting cobble deposits
AHP 007	May 18, 2016 12:00 hrs	30	Bare soil	N/A	None	N/A	N/A	N/A	N/A	N/A	Low	N/A	N/A	None	None	Clay (25) Silt (50) Sand (25)	None	18	N/A	Bare swale, with no sign of vegetation or waterflow
AHP 008	May 18, 2016 12:00 hrs	30	Bare soil	N/A	None	N/A	N/A	N/A	N/A	N/A	Low	N/A	N/A	None	None	Clay (5) Silt (50) Sand (25) Gravel (20)	None	18	N/A	Bare swale, no sign of vegetation or water flow, 0.75 m wide channelized portion (evidence of cattails)
AHP 009	May 18, 2016 12:25 hrs	30	Broad-leaved cattail	High	Deciduous trees, none DS	Moderate 70%	N/A	N/A	N/A	N/A	Low	N/A	N/A	None	Broad-leaved cattail	Clay (5) Silt (50) Sand (45)	None	18	N/A	Dense band of broadleaved cattail, no standing water or evidence of flow
AHP 010	May 18, 2016 09:50 hrs	30	Terrestrial grasses, broad-leaved cattail, patches of red-osier dogwood	High	Grasses and cattail	Poor 30%	0.75-1.25	2-3.5	0.95-1.7	90	Moderate	Straight	Low	Moderate: RL, UB, WD, IV	Broad-leaved cattail	Clay (40) Silt (25) Sand (25) Cobble (10)	Seepages with iron staining	17	8.4	Small mostly straight channel through wide broad-leaved cattail riparian zone, evidence of heavy erosion
AHP 011	May 18, 2016 09:00 hrs	30	Terrestrial grasses with broad-leaved cattail, willow sp., red-osier dogwood	High	Grasses and cattail	Poor 30%	0.6 - 1.2	2.5 - 5.5	0.10 - 0.35	145	Moderate	Meander	Moderate	High: PL, RF, UB, WB, IV, RCK, CB	Broad-leaved cattail	Clay (20) Silt (30) Sand (25) Gravel (5) Cobble (10) Boulder (10)	None	13	8.3	Large pool north of reach, abundant algae throughout encrusting larger substrates
AHP 012	May 18, 2016 10:30 hrs	30	Terrestrial grasses with broad-leaved cattail, red-osier dogwood	High	Grasses and cattail	Poor 25%	1.2 - 4.0	4.5 - 6.5	0.2 - 0.5	160	Low	Meander	High	Limited: PL, IV	Broad-leaved cattail and terrestrial grasses	Clay (10) Silt (45) Sand (25) Detritus (20)	Seepages with iron staining	17	8.4	Small, highly braided channel flowing through riparian belt
AHP 013	May 18, 2016 11:25 hrs	30	No riparian vegetation DS, US deciduous hedgerow	High	Deciduous trees, none DS	Good 70%	0.35 - 1.1	1.25 - 2.0	0.1 - 0.2	170	Low	Meander	High	Limited: PL, RF, WB	None	Clay (25) Silt (35) Sand (25) Cobble (15)	None	18	17.4	Small channel with poor definition flowing through agricultural field down stream, upstream flows through deciduous forest
AHP 014	May 17, 2016 15:50 hrs	30	Terrestrial grasses, deciduous forest	Low	Grasses	None	0.2 - 0.65	1.1 - 2.75	0.1 - 0.35	120	Moderate	Meander	High	Limited: RF, CB	None	Clay (20) Silt (30) Sand (20) Gravel (25) Cobble (5)	None	18	21.6	Small channelized stream with signs of heavy erosion
AHP 015	May 17, 2016 15:20 hrs	30	Terrestrial grasses, deciduous forest	Moderate	Grasses	Poor 20%	0.5 - 1.1	1.5 - 3	0.25 - 0.55	90	Moderate	Meander	High	Limited: RF, UB	Isolated patches of terrestrial vegetation	Clay (35) Silt (30) Sand (20) Gravel (15)	None	18	17.4	Small channelized stream with signs of heavy erosion, small sediment booms acting as barriers to fish movement
AHP 016	May 17, 2016 14:20 hrs	25	Terrestrial grasses	Moderate	Grasses	Poor 20%	0.78 - 1.3	1.5 - 3	0.5 - 0.75	90	Moderate	Meander	High	Limited: RF, UB, IV	Terrestrial grasses	Clay (35) Silt (30) Gravel (25) Detritus (10)	None	16	14.2	Small well defined channel, upstream extent at small barrier
AHP 017	May 17, 2016 14:20 hrs	30	Terrestrial grasses	Moderate	Grasses	Poor 75%	1.2 - 2.25	3 - 5.5	0.25	170	Moderate	Meander	High	None to Limited: IV	Terrestrial grasses	Clay (45) Silt (55)	None	16	13.4	Poorly defined channel vegetated by dense terrestrial grasses, very low flow
AHP 018	May 17, 2016 14:00 hrs	30	Terrestrial grasses	Moderate	Grasses	N/A	N/A	N/A	N/A	N/A	Moderate	Meander	High	None to Limited: IV	N/A	Silt (55) Sand (45)	None	16	N/A	No defined channel, sparsly vegetated swale, no standing water
AHP 019	May 17, 2016 14:15 hrs	30	Terrestrial grasses	Moderate	Grasses	N/A	N/A	N/A	N/A	N/A	Moderate	Meander	High	None to Limited: IV	N/A	Silt (55) Sand (45)	None	16	N/A	No defined channel, sparsly vegetated swale, no standing water

Aquatic Habitat Assessments

NRSI Reach References	Survey Date and Time	Approximate Reach Length (m)	Riparian Zone		Canopy		Channel Morphology							Fish Cover**	Instream Vegetation	Substrate (%)	Groundwater evidence	Air Temp. ()	Water Temp. ()	Other
			Vegetation Type*	Vegetation Density	Canopy Type	Quality and % Shade of Canopy	Wetted Width (m)	Bankfull Width (m)	Bank Height (m)	Bank Slope (°)	Gradient	Meander or Straight	Bank Stability							
AHP 020	May 19, 2016 08:20 hrs	30	Terrestrial grasses, spotted jewelweed, red-osier dogwood	High	Deciduous Trees	Poor 5%	DNC	23	DNC	175	Low	Straight	High	None	None	DNC	Jewelweed, marsh marigold, iron staining	13	8.9	Old artesian well head in seepage area
AHP 020B	May 19, 2016 08:45 hrs	100	Terrestrial grasses, herbaceous plants, horsetail sp., wheat	High	None	None	0.2 - 0.65	0.6 - 1.4	0.2-0.3	175	Low	Straight	Low	None	None	Clay (30) Silt (60) Sand (10)	Iron staining	13	9.8	Through tilled and planted agricultural field
AHP 021	May 19, 2016 09:10 hrs	100	Terrestrial grasses, herbaceous plants, horsetail sp., wheat	High	None	None	0.2 - 0.35	0.6 - 0.95	0.25 - 0.35	175	Low	Straight	Low	None	Filamentous algae	Clay (30) Silt (50) Sand (10) Gravel (5) Cobble (5)	Iron staining	13	12.4	Through tilled and planted agricultural field, small amount of flow through channel
AHP 022	May 19, 2016 09:45 hrs	50	Terrestrial grasses, herbaceous plants, horsetail sp., wheat	Low	None	None	0.2 - 0.35	0.5 - 0.75	0.25 - 0.35	175	Low	Straight	Low	None	Filamentous algae	Clay (30) Silt (50) Sand (10) Gravel (5) Cobble (5)	None	13	N/A	Through tilled and planted agricultural field, minimal flow through channel
AHP 023	May 19, 2016 09:30 hrs	100	Terrestrial grasses, herbaceous plants, horsetail sp., wheat	Low	None	None	0.2 - 0.35	0.6 - 0.95	0.25 - 0.35	175	Low	Straight	Low	None	Filamentous algae	Clay (30) Silt (50) Sand (10) Gravel (5) Cobble (5)	None	13	N/A	Through tilled and planted agricultural field, minimal flow through channel
AHP 024	May 19, 2016 10:50 hrs	10	Terrestrial grasses, herbaceous plants, horsetail sp., wheat	High	None	None	DNC	2.4 - 2.6	0.2 - 0.25	175	Low	Straight	Moderate	None	Terrestrial grasses, clover sp., dandelion	Clay (20) Silt (60) Sand (20)	None	13	N/A	Through tilled and planted agricultural field, small amount of flow through channel
AHP 025	May 19, 2016 10:10 hrs	10	Terrestrial grasses, herbaceous plants, horsetail sp., wheat	High	None	None	0.2 - 0.35	0.6 - 0.7	0.25 - 0.4	175	Low	Straight	Moderate	None	Terrestrial grasses, clover sp., dandelion	Clay (20) Silt (60) Sand (20)	None	13	10.4	Through tilled and planted agricultural field, small amount of flow through channel
AHP 026	May 19, 2016 10:10 hrs	10	Terrestrial grasses, herbaceous plants, horsetail sp., wheat	High	None	None	N/A	1.4 - 2.6	0.3 - 0.4	175	Low	Straight	Moderate	None	Terrestrial grasses, clover sp., dandelion	Clay (20) Silt (60) Sand (20)	None	13	N/A	Through tilled and planted agricultural field, no water in channel
AHP 027	May 18, 2016 14:45 hrs	30	Terrestrial grasses with broad-leaved cattail	High	Deciduous trees	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	None	N/A	None	18	N/A	Dry vegetated swale with no signs of flowing water
AHP 028	May 18, 2016 08:15 hrs	30	Terrestrial grasses, phragmites sp., broad-leaved cattail	Low	Grasses	None	N/A	2.5 - 3.5	0.1 - 0.35	145	Moderate	Meander	High	None to Limited: CB	Phragmites sp.	Clay (20) Silt (30) Gravel (25) Cobble (25)	None	13	7.4	No sign of flow, isolated pool in vegetated swale
AHP 029	May 18, 2016 12:35 hrs	40	Terrestrial grasses, red-osier dogwood, deciduous trees	High	Deciduous trees	Good 65%	1.2 - 2.3	4.5 - 7.0	1.1 - 1.4	90	Moderate	Meander	High	Moderate: PL, RF, UB, WB, CB	None	Clay (10) Silt (30) Sand (20) Gravel (25) Cobble (10)	None	18	13.2	Small meandering channel, dense patches of encrusting algae throughout channel

* Vegetation Type Definitions: Downstream (DS), Upstream (US)

** Fish cover definitions: Pools (PL), Riffles (RF), Undercut Banks (UB), Woody Debris (WD), Cobble (CB), Rock (RCK), Instream Vegetation (IV)

Electrofishing Fish Community Results

Common Name	Latin Name	Electrofishing Stations												
		EMS-001	EMS-002	EMS-003	EMS-004	EMS-005	EMS-006	EMS-007	EMS-008	EMS-009	EMS-010	EMS-011	EMS-012	EMS-013
Blacknose Dace	Rhinichthys atratulus								3	1			10	
Creek Chub	Semotilus atromaculatus								1					
Fathead Minnow	Pimephales promelas						11		1	17				
Johnny Darter	Etheostoma nigrum												1	
White Sucker	Catostomus commersoni								3					

Maps

Map 1a

City of Vaughan
Block 27 Secondary Plan
Terrestrial Monitoring Stations

617000 618000 619000

4861000 4860000 4859000

KIRBY RD
JANE ST
KEELE ST
HWY 400
TESTON RD

ANR-001 ANR-002 ANR-003 ANR-004 ANR-005 ANR-006 ANR-007 ANR-008 ANR-009 ANR-010 ANR-011 ANR-012 ANR-013 ANR-014 ANR-015 ANR-016 ANR-017 ANR-018 ANR-019 ANR-020 ANR-021

BMB-001 BMB-002 BMB-003 BMB-004 BMB-005 BMB-006 BMB-007

Legend

- Block 27
- Anuran Survey Station (ANR)
- Breeding Bird Monitoring Station (BMB)
- Proposed Road
- Railway
- Highway
- Primary Road
- Secondary Road
- Watercourse
- Water Body

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1576
Date: July 4, 2016

NAD83 - UTM Zone 17
Size: 11x17"
1:12,500

N

0 200 400 600 800 Metres

Path: X:\1576_Block27_SecondaryPlan_Vaughan\NRSI_1576_Map1a_TerrestrialMonitoring_13K_2016_07_04_LEH.mxd

Map 1b

City of Vaughan
Block 27 Secondary Plan
Aquatic Monitoring Stations

617000 618000 619000

4861000 4860000 4859000

KIRBY RD
JANE ST
KEELE ST
HWY 400
TESTON RD

AHP-019
AHP-018
AHP-017
EMS-004
AHP-016
EMS-005
AHP-015
EMS-006
AHP-014
EMS-007
AHP-001
AHP-013
EMS-011
AHP-002
AHP-007
AHP-003
AHP-012
EMS-010
AHP-023
AHP-004
EMS-001
AHP-008
AHP-022
AHP-009
EMS-002
AHP-021
AHP-010
EMS-009
AHP-005
EMS-003
AHP-025
AHP-026
AHP-027
AHP-011
EMS-008
AHP-020
AHP-024
AHP-020B
AHP-028
AHP-029
EMS-012
AHP-006
EMS-013

Legend

- Block 27
- Aquatic Habitat Point (AHP)
- Electrofish Monitoring Station (EMS)
- Proposed Road
- Railway
- Highway
- Primary Road
- Secondary Road
- Watercourse
- Water Body

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1576
Date: June 24, 2016

NAD83 - UTM Zone 17
Size: 11x17"
1:12,500

N

0 200 400 600 800 Metres

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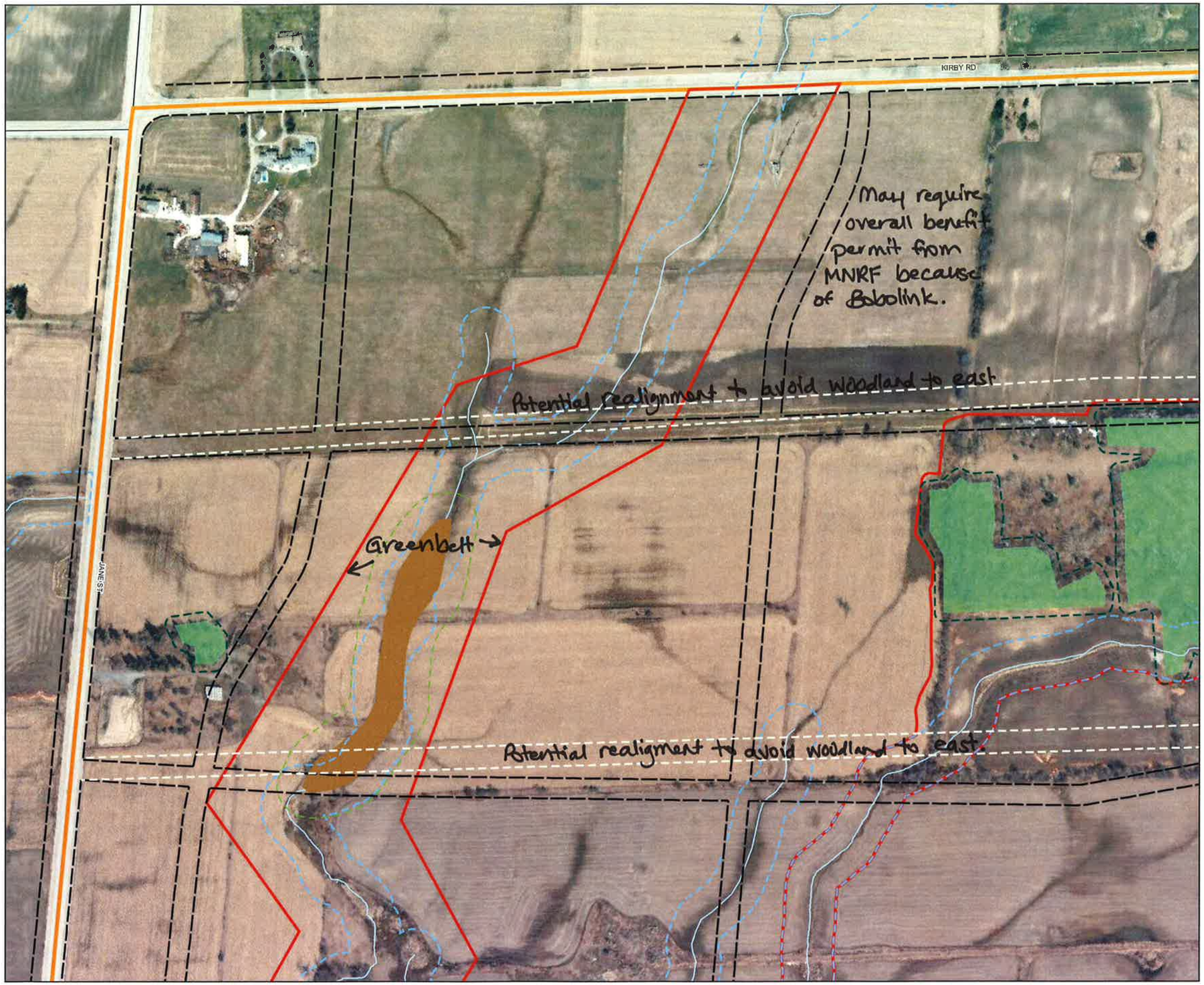
Appendix A2

Block 27 Environmental Road Constraints

Map 1

City of Vaughan
Block 27 Secondary Plan

Road Constraints



Key Map

Legend

- Block 27
- Proposed Natural Heritage Network (NRSI)
- Proposed Road
- Proposed Road Realignment
- Primary Road
- Secondary Road
- Watercourse
- Watercourse 30m Buffer
- Other Wetland (Non-PSW)
- Wetland 30m Buffer
- Forest
- Forest 10m Buffer
- Roads

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

Project: 1576
Date: July 4, 2016

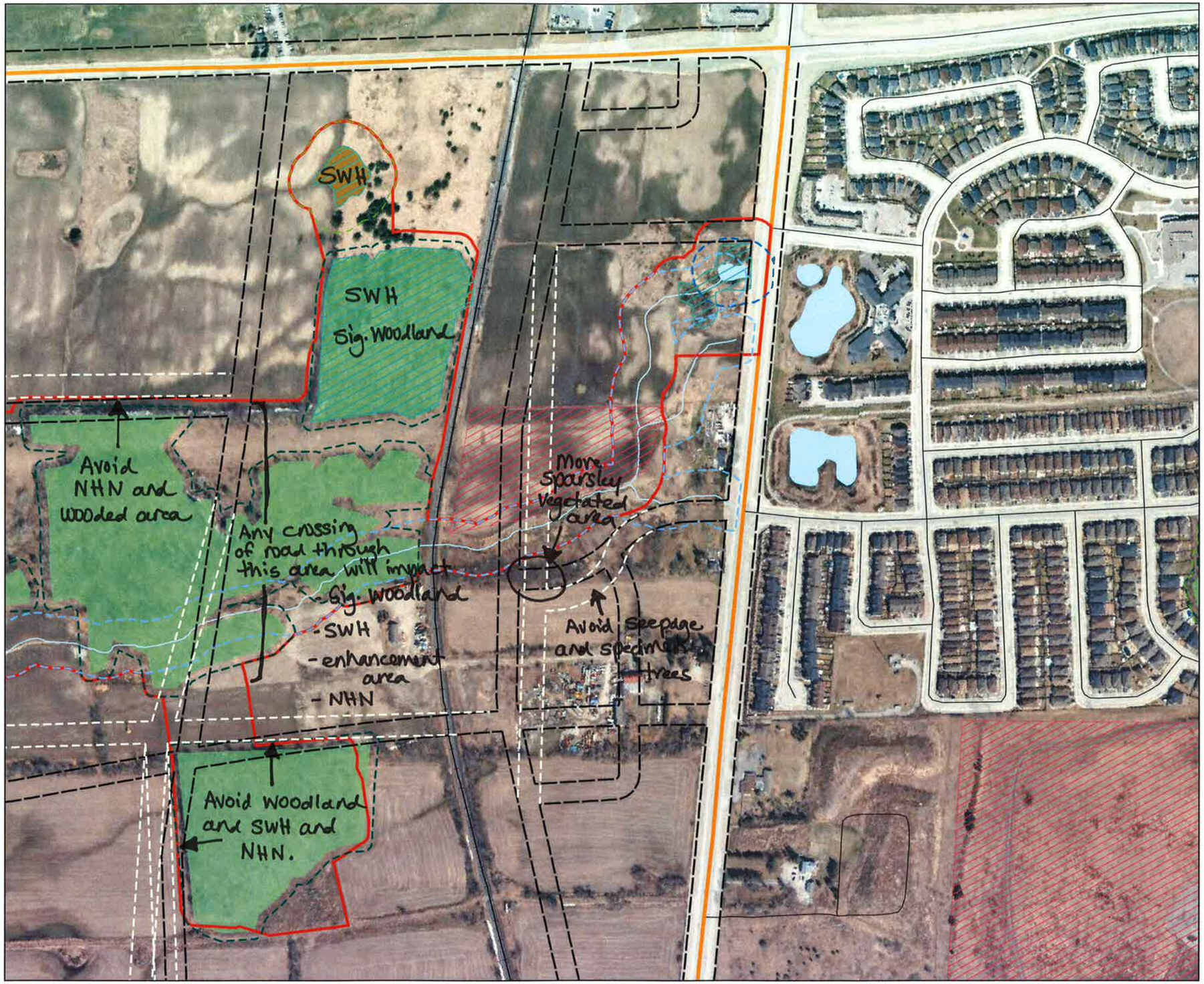
NAD83 - UTM Zone 17
Size: 11x17"
1:4,500

0 100 200 300 Metres

Map 2

City of Vaughan
Block 27 Secondary Plan

Road Constraints



Key Map

Legend

- Block 27
- Proposed Natural Heritage Network (NRSI)
- Proposed Road
- Proposed Road Realignment
- Railway
- Primary Road
- Secondary Road
- Watercourse
- Watercourse 30m Buffer
- Water Body
- Waterbody 30m Buffer
- Other Wetland (Non-PSW)
- Wetland 30m Buffer
- Forest
- Forest 10m Buffer
- Amphibian Breeding SWH (Woodland)
- Threatened Birds - Grassland
- Roads

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1576
Date: July 4, 2016

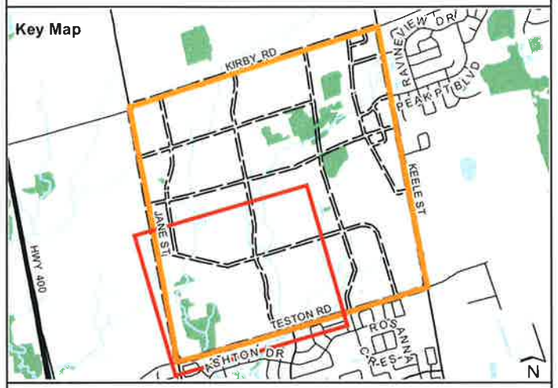
NAD83 - UTM Zone 17
Size: 11x17"
1:4,500

0 100 200 300 Metres

Map 3

City of Vaughan
Block 27 Secondary Plan

Road Constraints



Legend

- Block 27
- Proposed Natural Heritage Network (NRSI)
- Proposed Road
- Primary Road
- Secondary Road
- Watercourse
- Watercourse 30m Buffer
- Water Body
- Waterbody 30m Buffer
- Other Wetland (Non-PSW)
- Wetland 30m Buffer
- Forest
- Forest 30m Buffer
- Forest 10m Buffer
- Amphibian Breeding SWH (Wetland)
- Roads

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

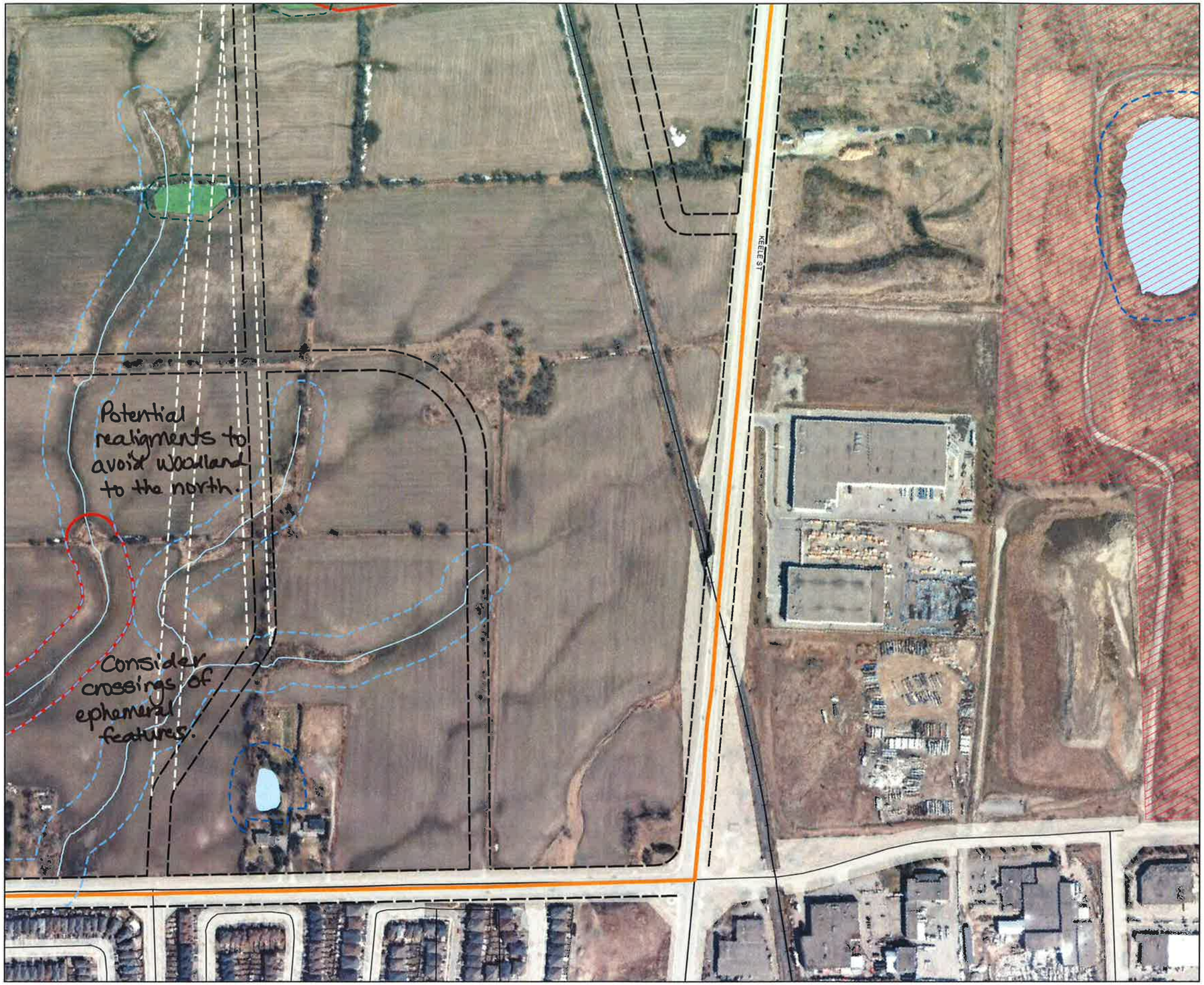
Project: 1576 Date: July 4, 2016	NAD83 - UTM Zone 17 Size: 11x17" **1:4,500**

0 100 200 300 Metres

Map 4

City of Vaughan
Block 27 Secondary Plan

Road Constraints



Legend

- Block 27
- Proposed Natural Heritage Network (NRSI)
- Proposed Road
- Proposed Road Realignment
- Railway
- Primary Road
- Secondary Road
- Watercourse
- Watercourse 30m Buffer
- Water Body
- Waterbody 30m Buffer
- Forest
- Forest 10m Buffer
- Threatened Birds - Grassland
- Roads

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1576
Date: July 4, 2016

NAD83 - UTM Zone 17
Size: 11x17"
1:4,500

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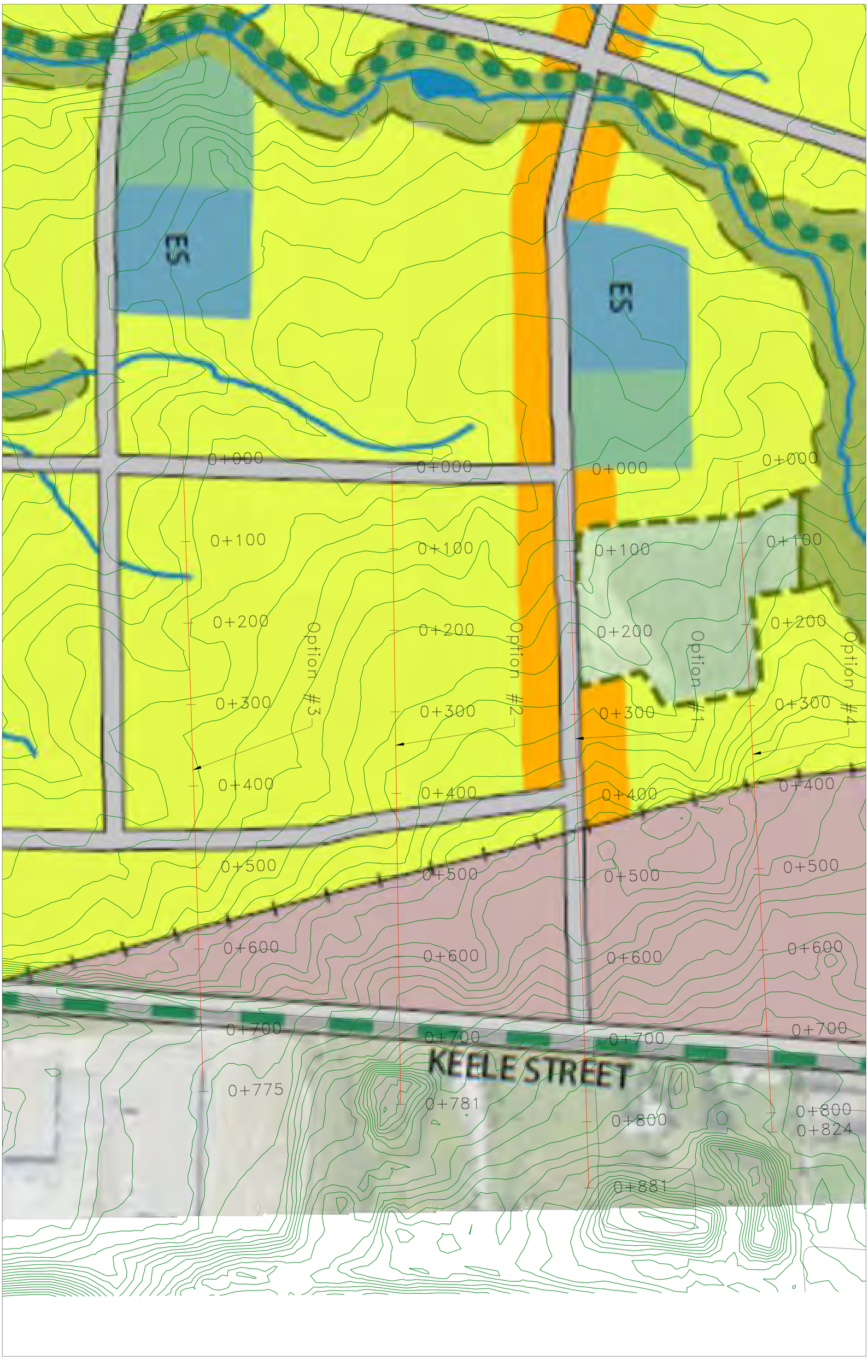
Appendix A3

Street 2 Conceptual Road Profiles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0+100
0+100
0+100
0+200
0+200
0+200
0+200
Option #3
Option #2
Option #1
Option #4
0+300
0+300
0+300
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0+400
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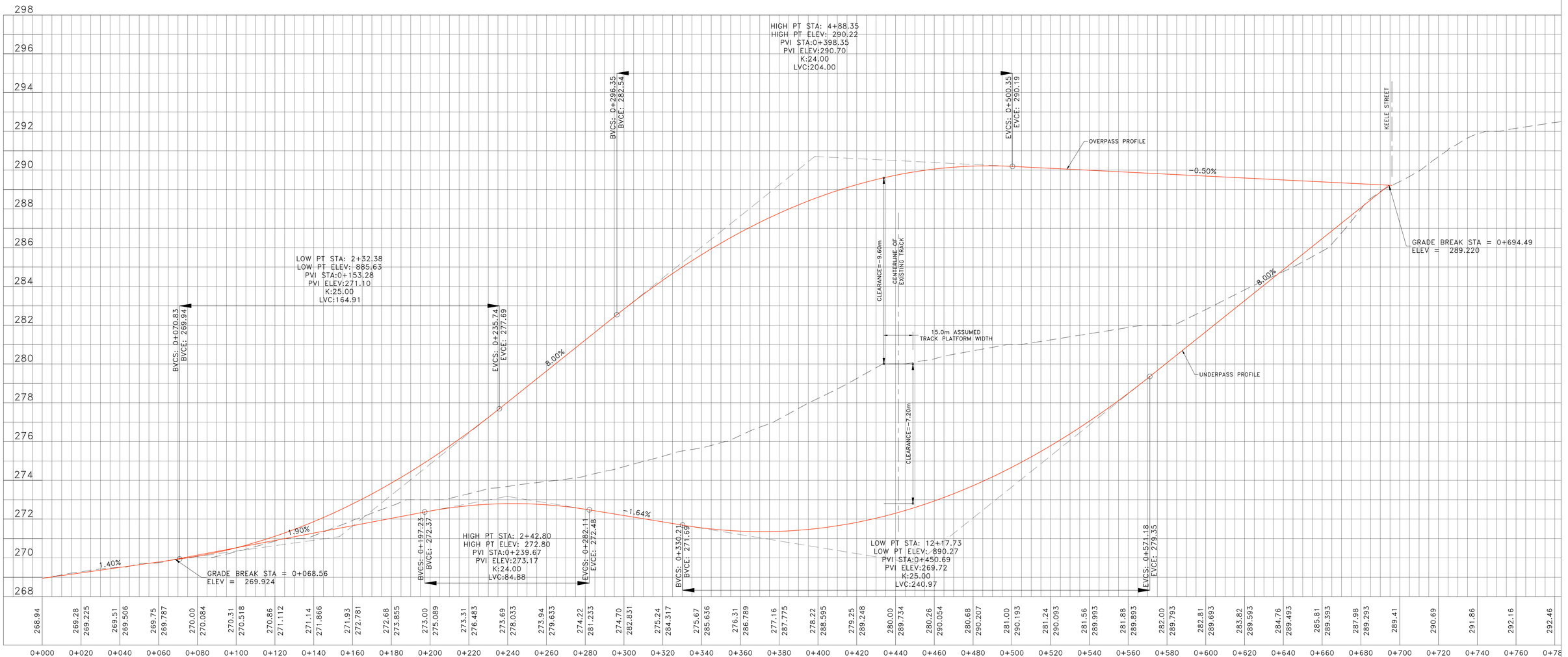
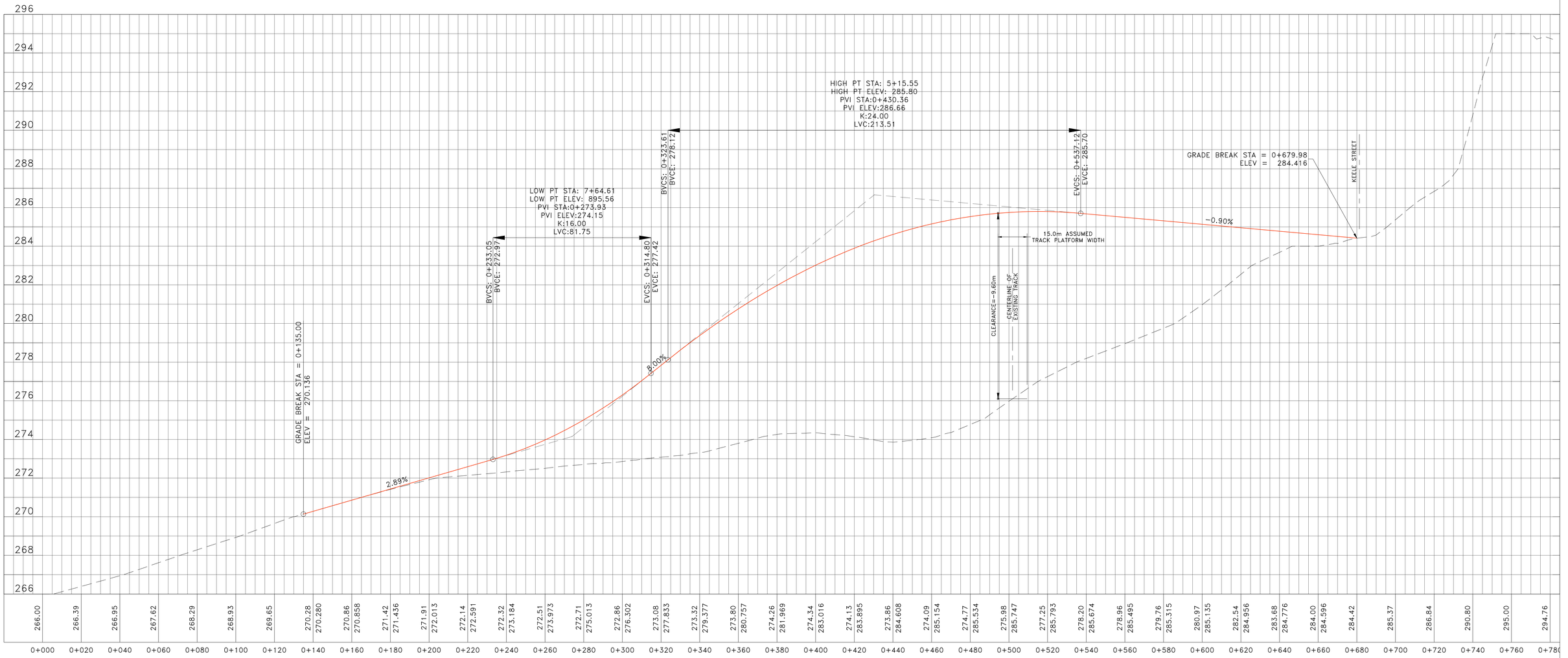
0+800
0+824
0+881



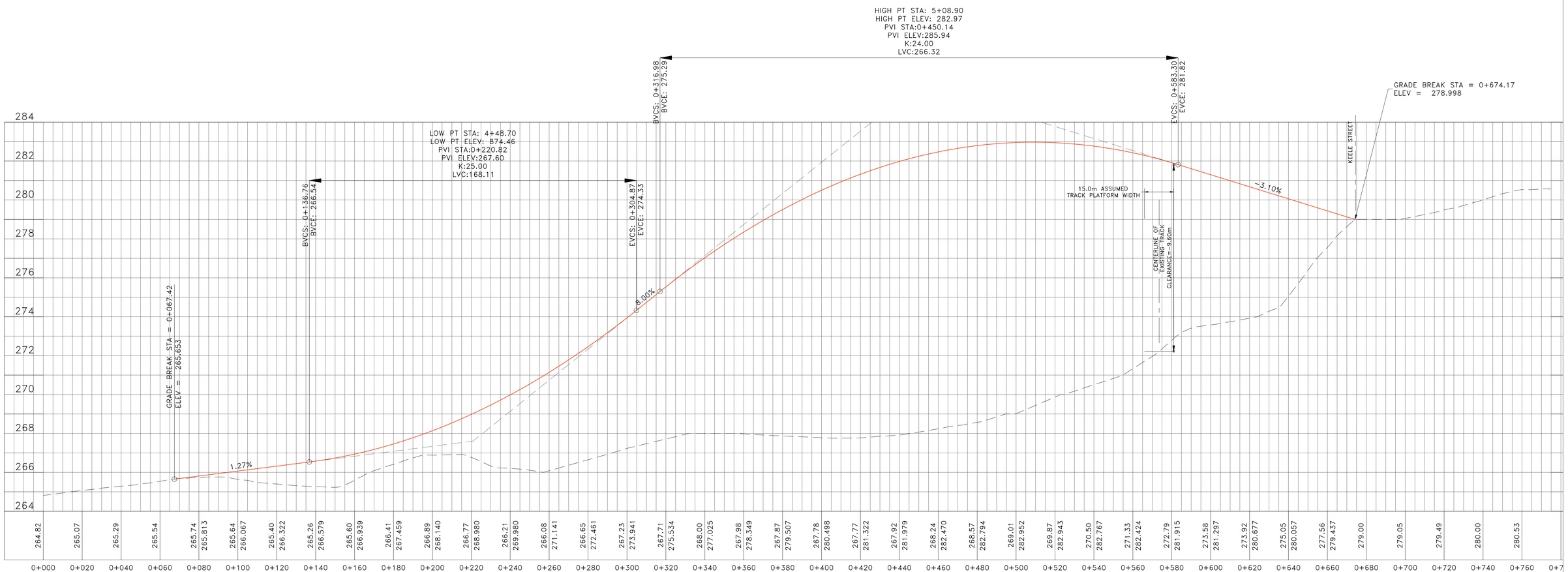
Option #1 PROFILE

PROPOSED ROAD PROFILE (URBAN COLLECTOR UNDIVIDED, 80KM/H DESIGN SPEED)



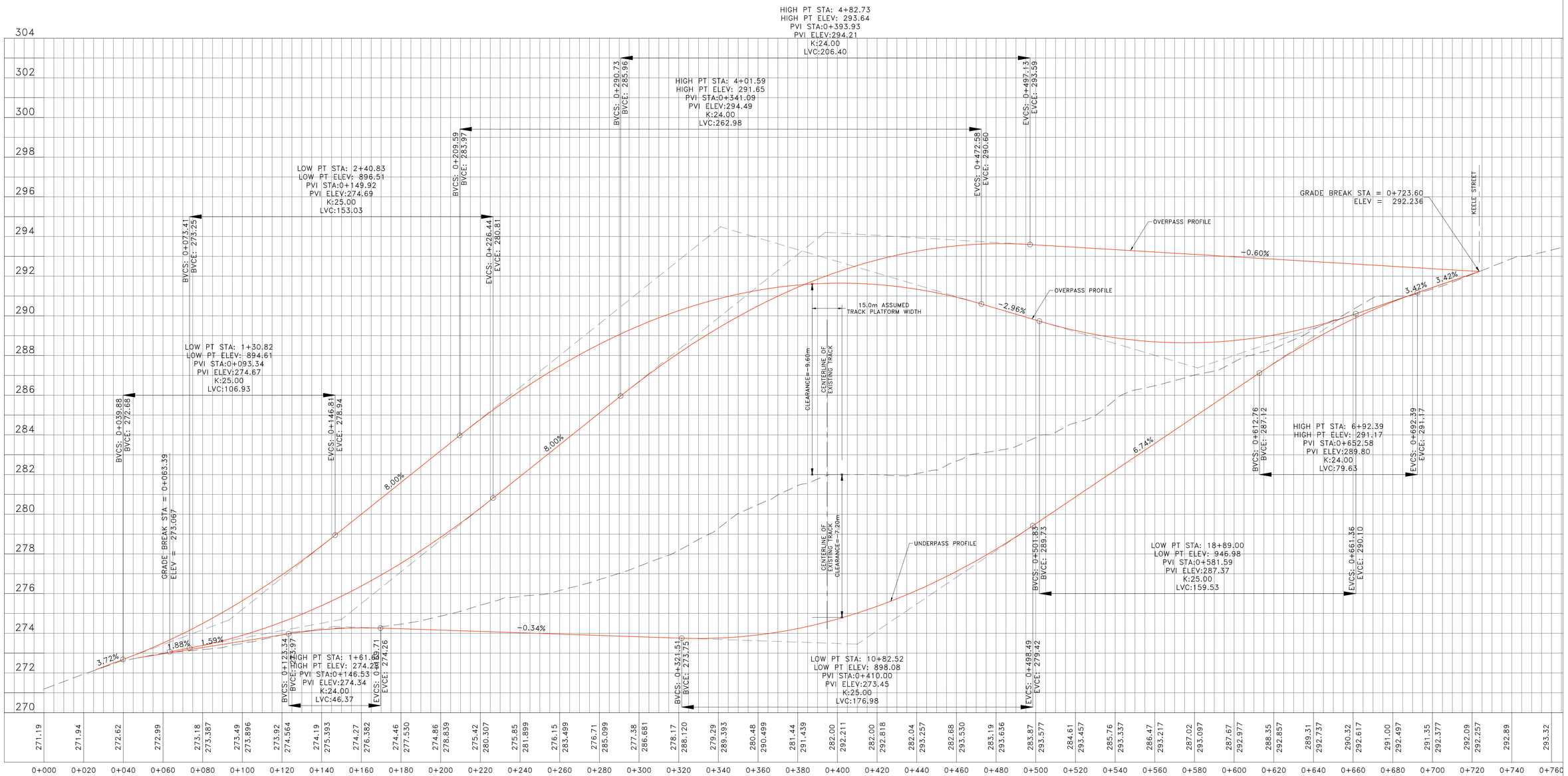
Option #2 PROFILE

PROPOSED ROAD PROFILE (URBAN COLLECTOR UNDIVIDED, 80KM/H DESIGN SPEED)



Option #3 PROFILE

PROPOSED ROAD PROFILE (URBAN COLLECTOR UNDIVIDED, 80KM/H DESIGN SPEED)



Option #4 PROFILE

PROPOSED ROAD PROFILE (URBAN COLLECTOR UNDIVIDED, 80KM/H DESIGN SPEED)

Appendix B: Block 41 Transportation Network

City of Vaughan

January 2019

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Contents

Tables

Exhibits

1 Introduction

Prior to approval of any development applications in Block 41, which is designated as "New Community Areas", a Secondary Plan is required to be prepared and approved in accordance with the policies of Sections 10.1.1 and 10.1.1.1 of the VOP 2010. The Block 41 Secondary Plan will provide detailed policies with respect to land use, including height and density provisions, urban design, the protection of cultural heritage and archaeological resources, transportation, community facilities, natural heritage, and open space.

The City initiated the Block 41 Secondary Plan in the fall of 2014, completed background analysis and visioning, foundation studies, and presented an emerging land use concept plan at the Committee of the Whole Working Session on January 18, 2016 which was adopted by City Council on February 16, 2016. Subsequently, the most recent Draft Schedule was presented to the public at the Block 41 public hearing on February 13, 2019. The Draft Land Use Plan from February 13, 2019 is provided in **Exhibit 1-1**: Draft Land Use , and is subject to change as the Secondary Plan is finalized.

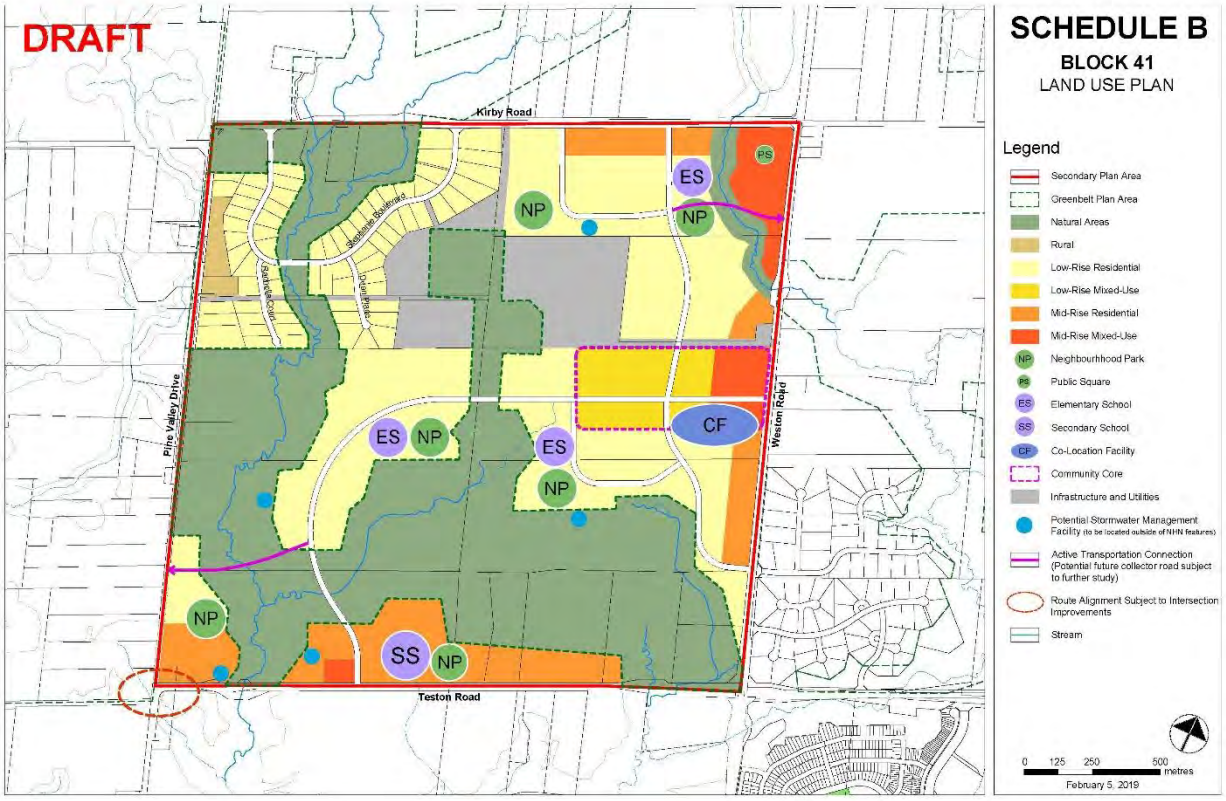

Exhibit 1-1: Draft Land Use Plan
Source: Block 41 Public Hearing, February 13, 2019

In support of the Block 41 Secondary Plan Study, to determine the transportation network required for the Block, the NVNCTMP project team investigated opportunities and constraints within the block, looked at existing and forecasted transportation demand, considered and explored connectivity to greater transportation network, and considered safe and sustainable

transportation options. Several network alternatives were identified and evaluated leading to a recommended transportation network for the Block 41 Secondary Plan.

2 Planning Policies

2.1 Policy Framework

The York Regional Official Plan (YROP) and the Vaughan Official Plan (VOP 2010) were developed under the broader policy framework provided by the Provincial Policy Statement, the Growth Plan for the Greater Golden Horseshoe, and the Greenbelt Plan. The policies arising from the Secondary Plan Study for the New Community Area Block 41, must be consistent with each of these Provincial, Regional and municipal policy documents, with a focus on creating complete communities that are socially, fiscally economically and environmentally stable over the long-term.

A significant portion of the Block 41 area is designated as “Protected Countryside” under the Greenbelt Plan, which includes Agricultural and Natural Systems, together with settlement areas, where most types of development are prohibited. These designations are recognized in the YROP and the VOP 2010.

3 Block 41 Land Use

The Block 41 area is bounded by Teston Road to the south, Kirby road to the north, Pine Valley Drive to the west and Weston Road to the east. The Block 41 lands have a total area of approximately 441 ha. A significant portion is in the Greenbelt, including a main tributary of the East Humber River. An existing estate residential community is situated in the Norwest quadrant of Block 41. Also, located within the Block 41 boundary is the TransCanada Pipeline Maple Compressor Station, and the pipeline which runs east-west mid-way across Block 41.

The Emerging Land Use Concept Report for the Block 41 Secondary Plan was presented to Committee of the Whole on January 18, 2016. The report provides details on the land use, urban design, transportation, servicing and storm water management, and sustainability and community energy for the development of the Block. To determine the preferred street network for Block 41, a number of constraints were considered, and alternative networks were identified and evaluated and ultimately recommended as input to the Block 41 Secondary Plan.

The vision for Block 41 is to have a sustainable and vibrant new community. The Block is designed to protect the natural and built heritage while also designing efficient development patterns and a variety of residential densities. The concept plan for land use and transportation for Block 41 includes:

- Five distinct neighbourhoods that will be served by commercial / mixed used nodes and community facilities,
- An integrated street network to connect homes, shops, schools, and adjacent communities,
- A recreational trail system connecting to the proposed TransCanada Pipeline Trail,

- A vast system of natural areas that define neighbourhood boundaries, and
- Jog eliminations of Pine Valley Drive at Kirby Road and at Teston Road.

Table 3-1 provides the breakdown of population and employment for Block 41. **Exhibit 3-1** illustrates the land use plan. Block 41 has an existing neighbourhood located in the northwest quadrant of the Block, therefore the major developments will occur in the northeast, southeast, and southwest quadrants. Similar to Block 27, the land use is primarily composed of residential units.

Table 3-1: Block 41 Population and Employment

Quadrant	2031 Population	2031 Employment
Northwest	280	50
Northeast	6,580	710
Southwest	690	0
Southeast	4,570	250
Total	**12,120**	**1,010**

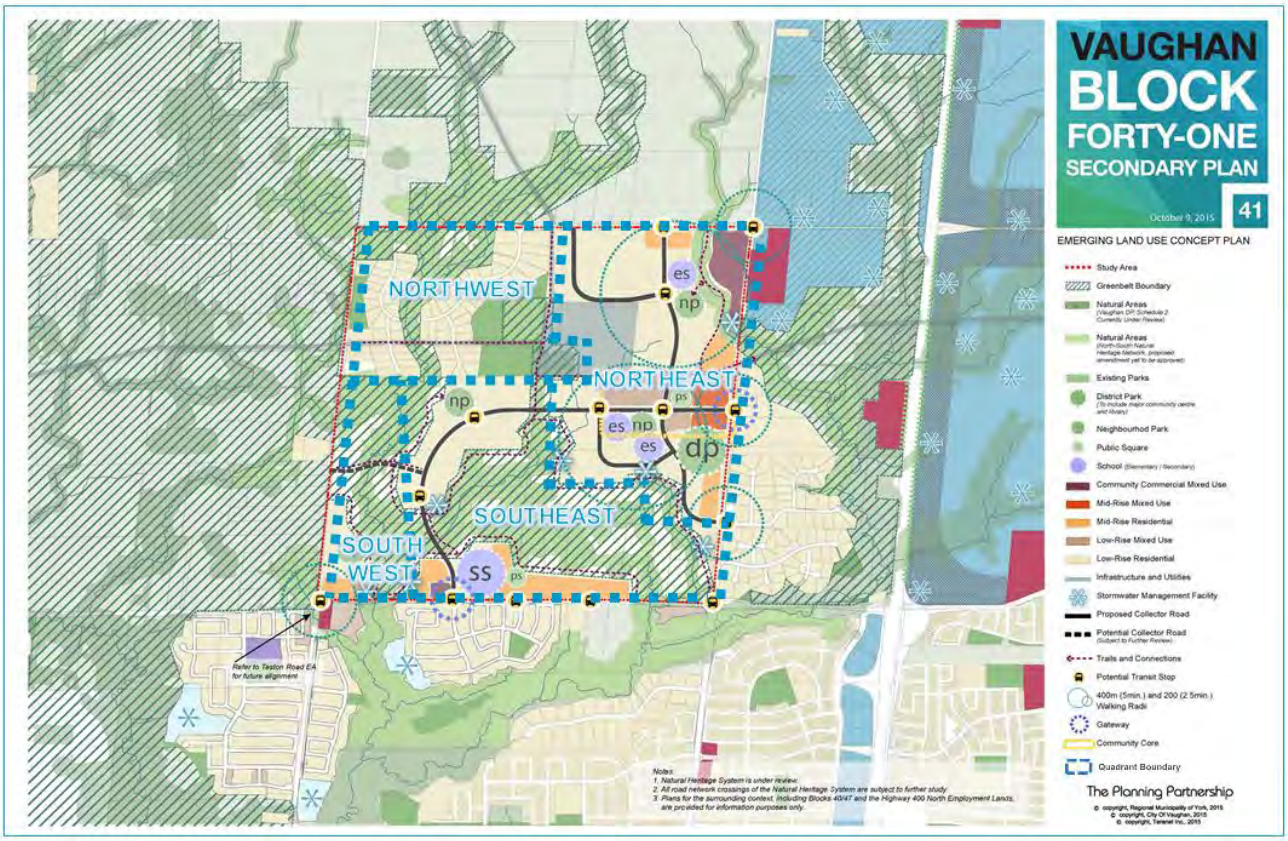

Exhibit 3-1: Block 41 Land Use Plan

4 Constraints

Identification of constraints to transportation network development in Block 41 are documented within the following sections. It is noted that the planning for the transportation network relies upon preliminary information readily available at the time of study. Further and more comprehensive review of the constraints in the area is required prior to construction and should include identification of all natural heritage features, natural (erosion and flood) hazards, and hydrogeological site conditions. This work is being carried out through the East Purpleville Creek Subwatershed Study.

4.1 Natural Heritage Network

In spring of 2012, the City initiated the Natural Heritage Network Study (NHN Study) aimed at building upon the natural heritage system mapping in the City's 2010 OP. While the NHN Study considered the City as a whole, the focus of effort was within the central and northern portions of the municipality where the majority of future land use changes are proposed. The City completed all four phases of the NHN Study and a final draft report was prepared in the spring of 2014. The NHN Study identified features within Block 41 and other lands that were recommended to be considered as part of a NHN.

The East Purpleville Creek Subwatershed Study was initiated in spring of 2014 and completed in March 2018 by Block 41 Landowners Group's consulting team. It provides input to the Block 41 Secondary Plan on the Natural Heritage Network, preliminary stormwater management concept and restoration plans. It also includes hydrology and erosion assessment for the larger East Purpleville subwatershed and recommends stormwater management criteria for all future developing areas in this subwatershed.

The City's proposed NHN has been further refined and revised based on these more detailed analyses from the New Community Blocks Subwatershed Studies.

Through communications with the Ministry of Natural Resources and Forestry, these watersheds were identified to contain Species at Risk, specifically Redside Dace in the East Humber River, Purpleville Creek, and Don River East Branch. Areas of Natural and Scientific Interest (ANSI's) in the Study Area include Humber River Valley Kleinburg, Maple Spur Channel, Maple Uplands and Kettles Candidate, while the East Humber River Wetlands are designated as Provincially Significant Wetlands.

The Natural Heritage Network occupies approximately 40% of Block 41 and will pose challenges to the collector street network as it will restrict connections to major arterial roads and midblock connections. However it also provides the opportunity to incorporate active transportation connections and enhance the sustainability and liveability of the community.

The Secondary Plan will aim to minimize any effects to the natural areas as part of the development of Block 41.

4.1.1 Wetlands within Block 41

A component of the provincially significant East Humber River Wetland Complex (PSW) is located in Block 41. **Exhibit 4-1** illustrates the locations of these wetlands with the Block. The wetlands are comprised of cattail marsh, meadow marsh, deciduous swamp communities, and thicket swamp. Wetlands associated with the provincially significant wetland complex also occur in the bottomland areas of the Purpleville Creek System. These wetlands will restrict connections and midblock crossing of the collector road network, however, these areas can be connected to the community through a trail system (subject to MNRF and TRCA approval).

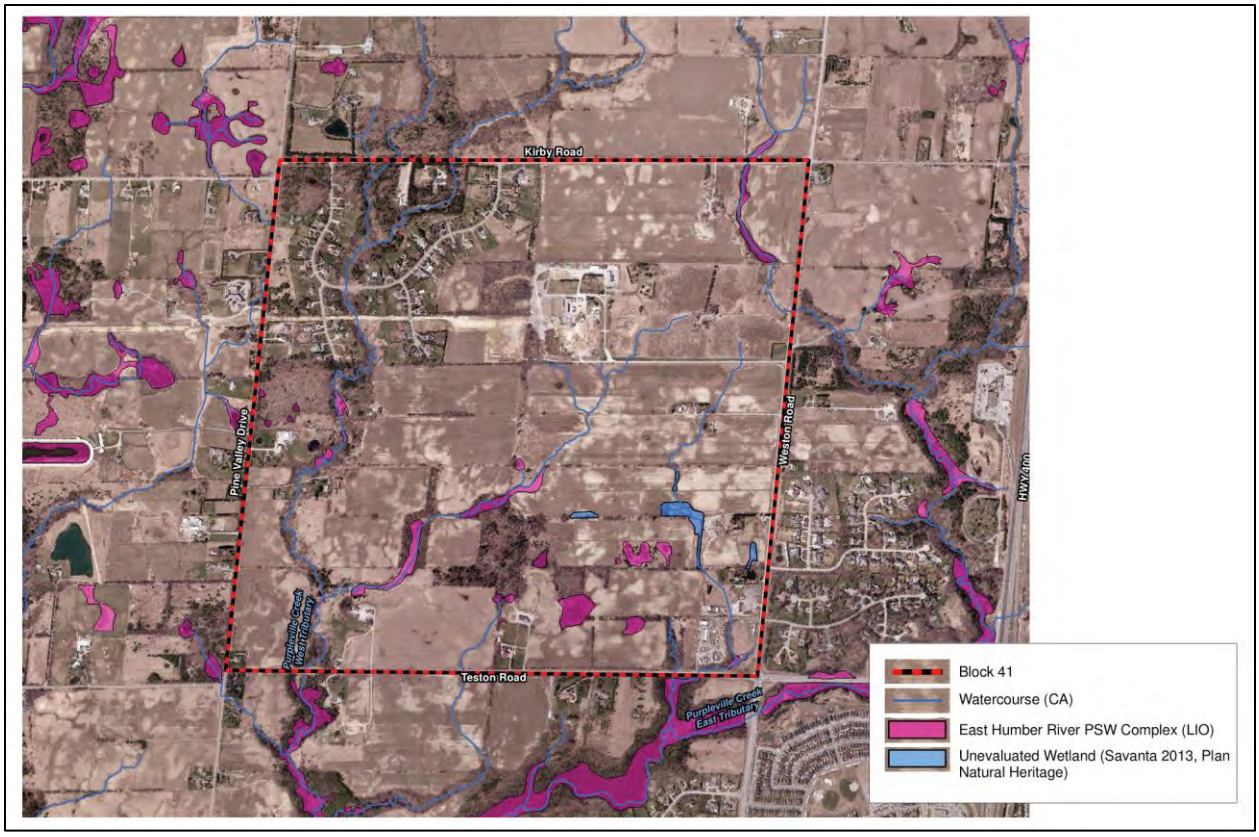

Exhibit 4-1: Block 41 – Wetlands

4.1.2 Woodlands

There are a variety of woodland features within Block 41. The woodlands are mainly located along the west tributary of Pupleville Creek and the central portion of the Block. Several of the woodlands have wetland inclusions in the form of treed swamps, thicket swamp and marsh. There are several significant woodlands located in Block 41. A variety of woodlands are located in the Block, including mixed forest, deciduous forest, and successional / cultural woodland. The mixed forest is comprised of red maple, sugar maple, eastern hemlock, and white pine. The deciduous forest is home to white ash, American beech, red oak, basswood, sugar maple, and hickory. **Exhibit 4-2** illustrates the areas of Block 41 covered by woodlands, identified as “significant forest” by the Region of York.

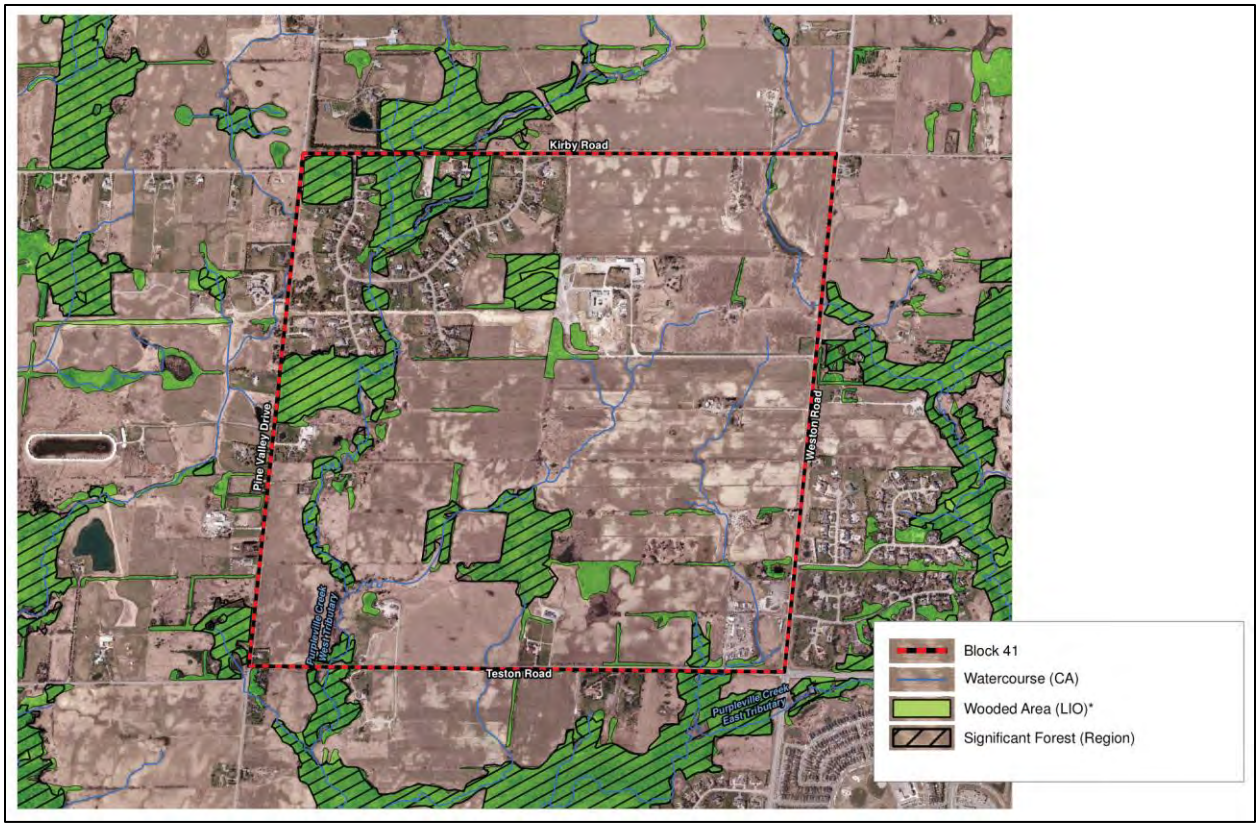

Exhibit 4-2: Block 41 – Woodlands

4.1.3 Species at Risk

Block 41 is home to several provincially rare species and species at risk. The provincially rare species and species at risk were documented by the Ministry or Natural Resources and Forestry (MNRF) and are documented in **Table 4-1**.

Table 4-1: Provincially Rare Species and Species at Risk

S3 Rank - Vulnerable	Special Concern	Threatened	Endangered
• Shining-branch Hawthorn • Scarlett Beebalm	• Northern Brook Lamprey • Eastern Milksnake • Eastern Wood-pewee • Wood Thrush • Snapping Turtle	• Eastern Meadowlark • Cerulean Warbler • Bobolink • Barn Swallow • Chimney Swift	• Redside Dace • Butternut

Source: MNRF Natural Heritage Information Centre Database

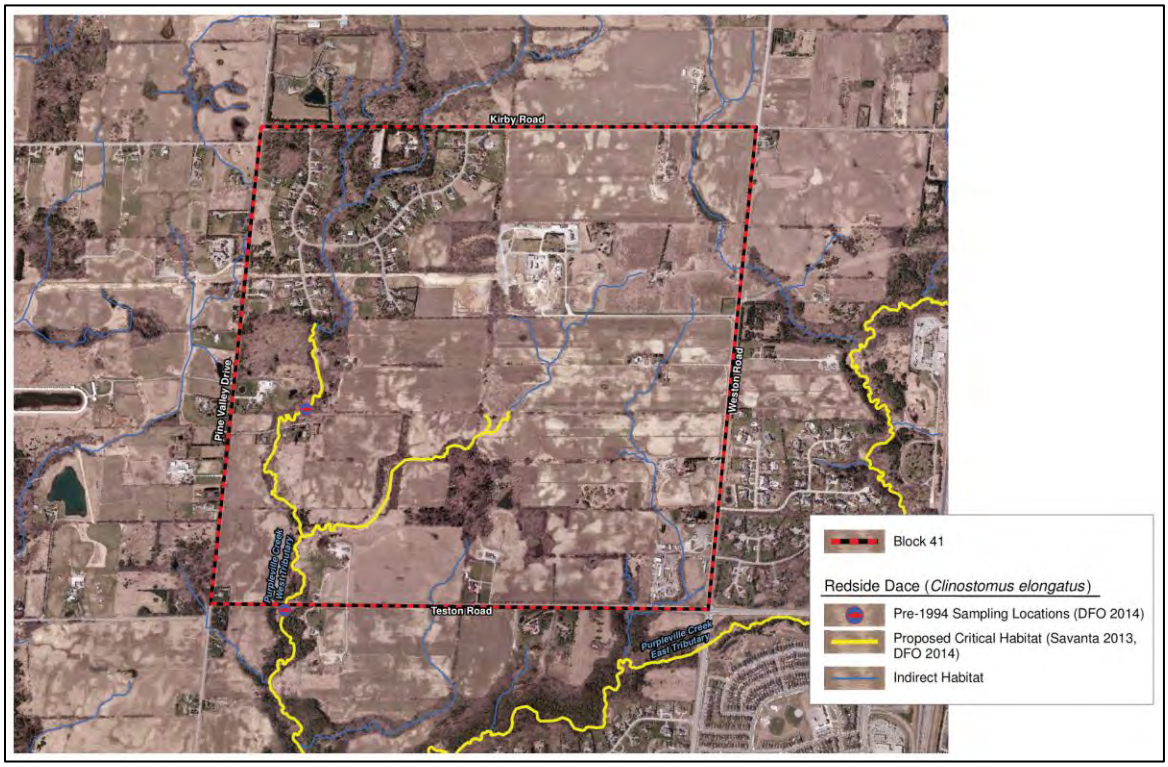

Exhibit 4-3: Block 41 – Species at Risk

4.1.4 Fisheries

The tributaries within Block 41 are identified by the Humber River Fisheries Management Plan (TRCA 2005) as cold water riverines as they provide habitats for cold water fish species including Redside Dace and Brook Trout. The Purpleville Creek and East Humber River are identified in the Plan as sensitive fisheries due to the species at risk located within Block 41.

4.2 TransCanada Pipeline and Compressor Station

A TransCanada Pipeline Canadian Mainline right-of-way (ROW) runs along the northern part of Block 41, parallel to Kirby Road. A compressor station is also located in the northeast quadrant of the Block. There are several regulations in regards to the Pipeline ROW, creating a land use barrier. However, it provides the opportunity to use the corridor for active transportation purposes, including trails and open space.

4.3 Archaeological Potential

Archaeological Assessments have been conducted as part of the Block Plan process with further assessments recommended for the Block 41 area. As per Section 4.4.1, no development or grading shall will occur on any site within the Study Area that is identified as being of high archaeological potential or archaeologically significant as a result of the archaeological evaluation carried out on the property, until protective and mitigative measures of all significant archaeological sites have been fulfilled to the satisfaction of the Ministry of Tourism, Culture and Sport (Archaeology Unit) and the City of Vaughan.

4.4 Built Heritage Resources

A Preliminary Cultural Heritage Resource Assessment was undertaken as part of the Block Plan process, which found a number of cultural heritage resources and landscapes that warrant the potential for conservation. It is recommended that further Heritage Impact Assessments be undertaken as part of the Block Plan process.

5 Collector Network Development

5.1 Preliminary Options

A collector road network is required within Block 41 to support development. During the initial planning stages, three potential collector networks were identified for Block 41 and are shown in **Exhibit 5-1** to **Exhibit 5-3**. Option C (**Exhibit 5-3**) was selected as the network most aligned with the vision of the community and was modified to provide a connection to Pine Valley Drive.

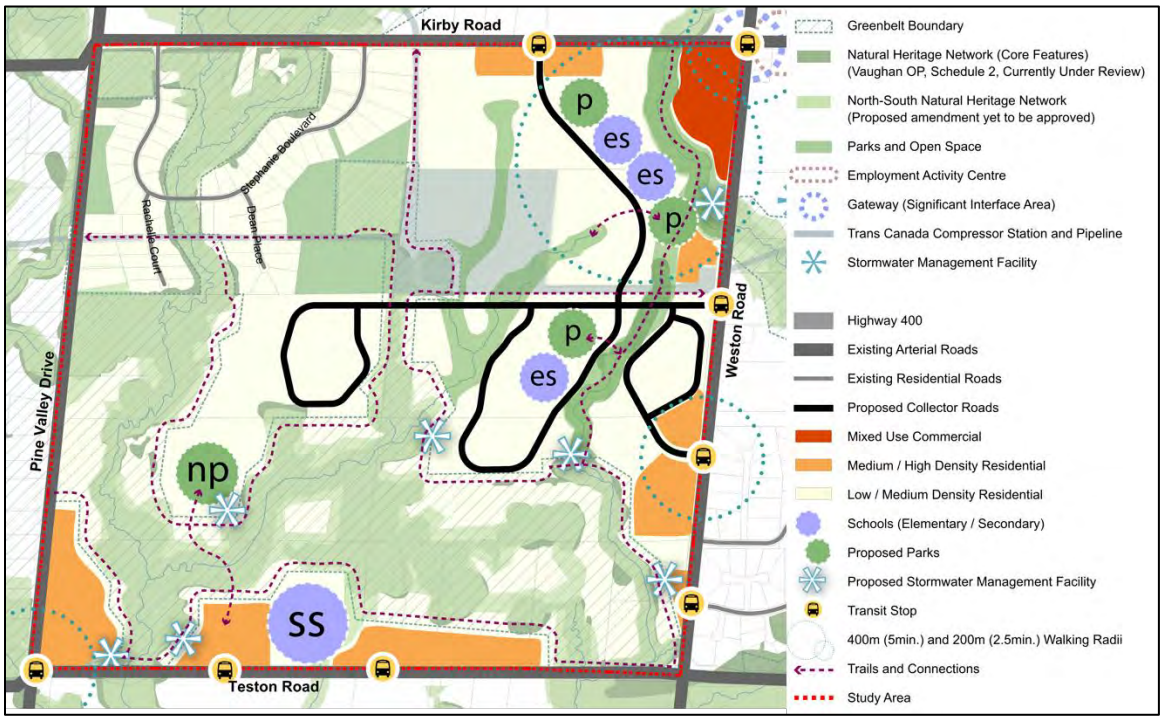

Exhibit 5-1: Block 41 Option A

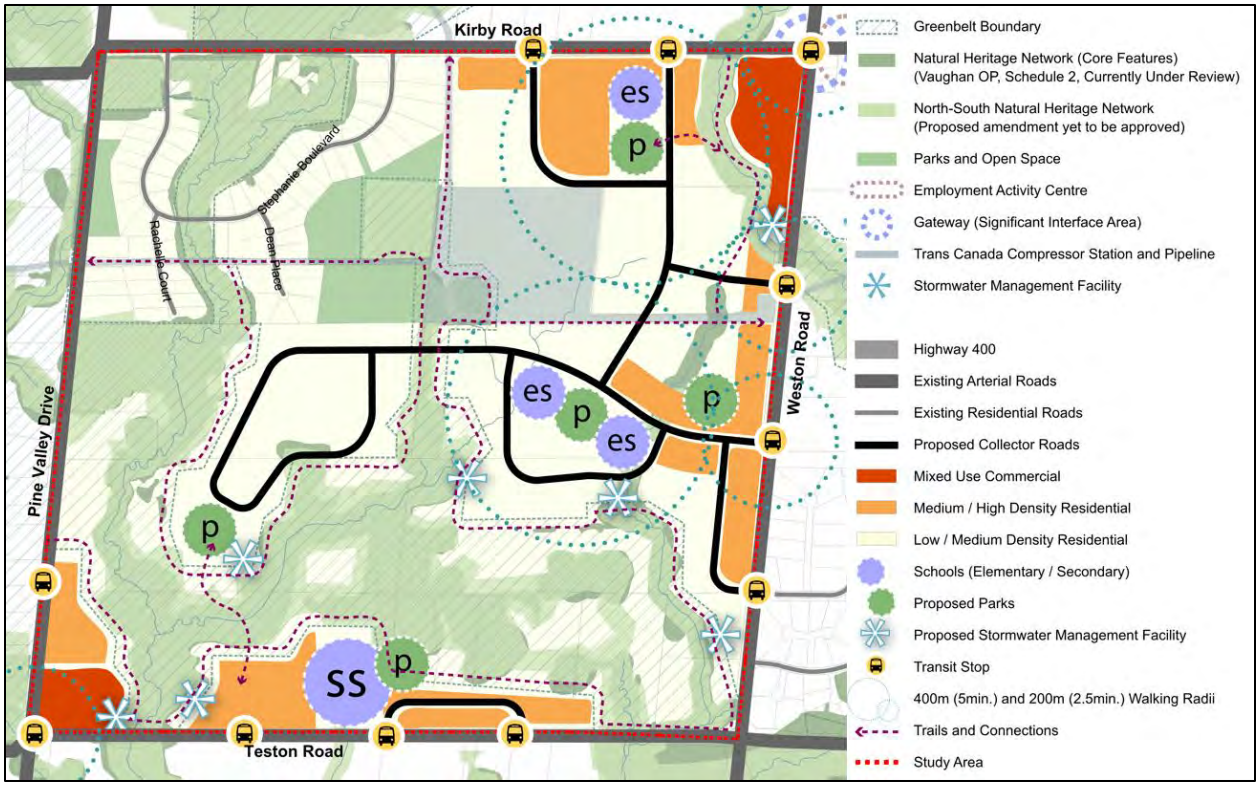

Exhibit 5-2: Block 41 Option B

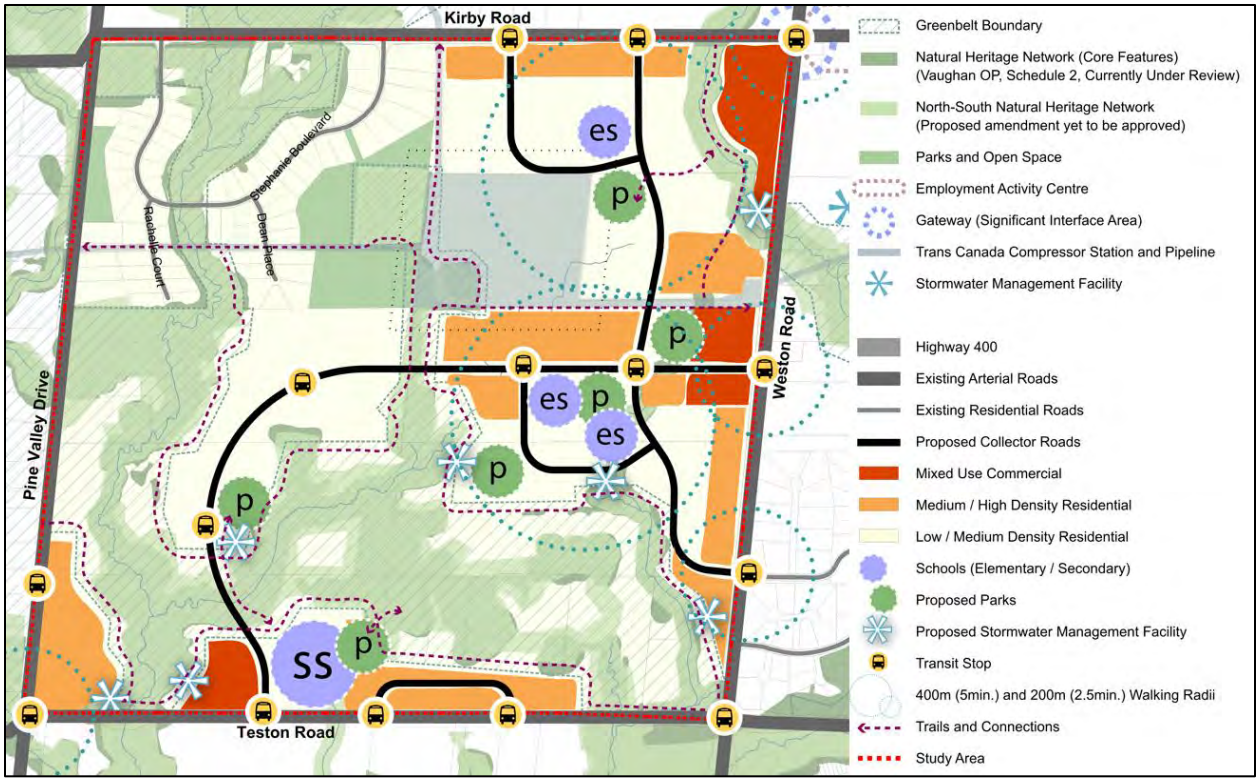

Exhibit 5-3: Block 41 Option C

Therefore, Option C was selected as the Initial City Network with a proposed road connection to Pine Valley Drive, subject to a future Environmental Assessment.

5.2 Alternative Transportation Networks

Three alternative transportation networks were identified for Block 41:

1. Preliminary Network with Background Information Provided by Block 41 Landowners Group (updated June 2017)
2. Initial City Network (October 2016)
3. Refined City Network (December 2016)

The collector network alternatives are illustrated below in **Exhibit 5-4** to **Exhibit 5-6** in the order listed above. It is noted that some consistencies are observed between the plans, while some streets are not consistent. A summary of all collector network alternatives can be seen in **Exhibit 5-7**. A naming system has been identified for the general location of major collector streets. A description of all streets between the three alternatives is provided in **Table 5-1**.

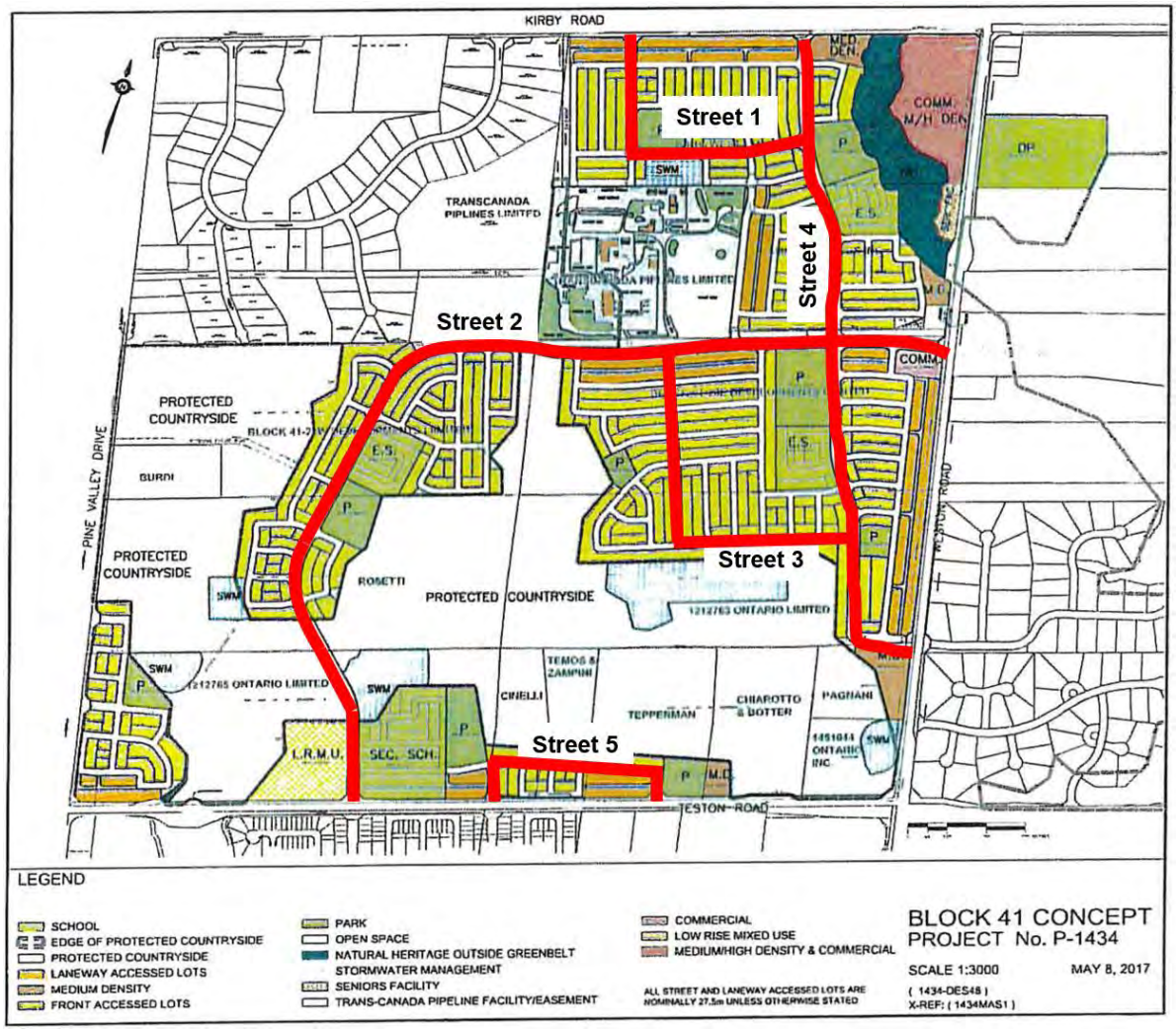

Exhibit 5-4: Preliminary Network (June 2017)

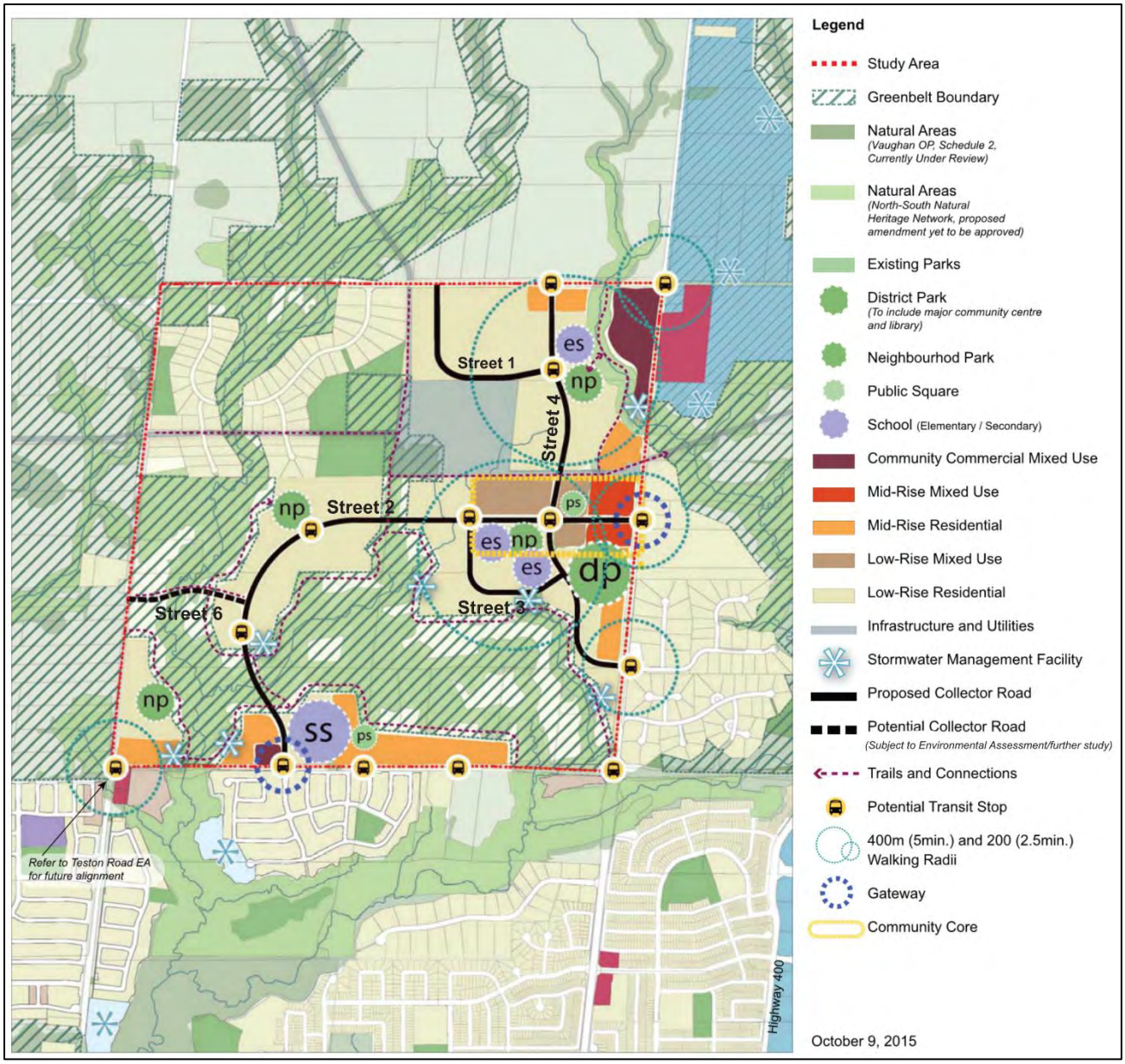

Exhibit 5-5: Initial City Network (October 2016)

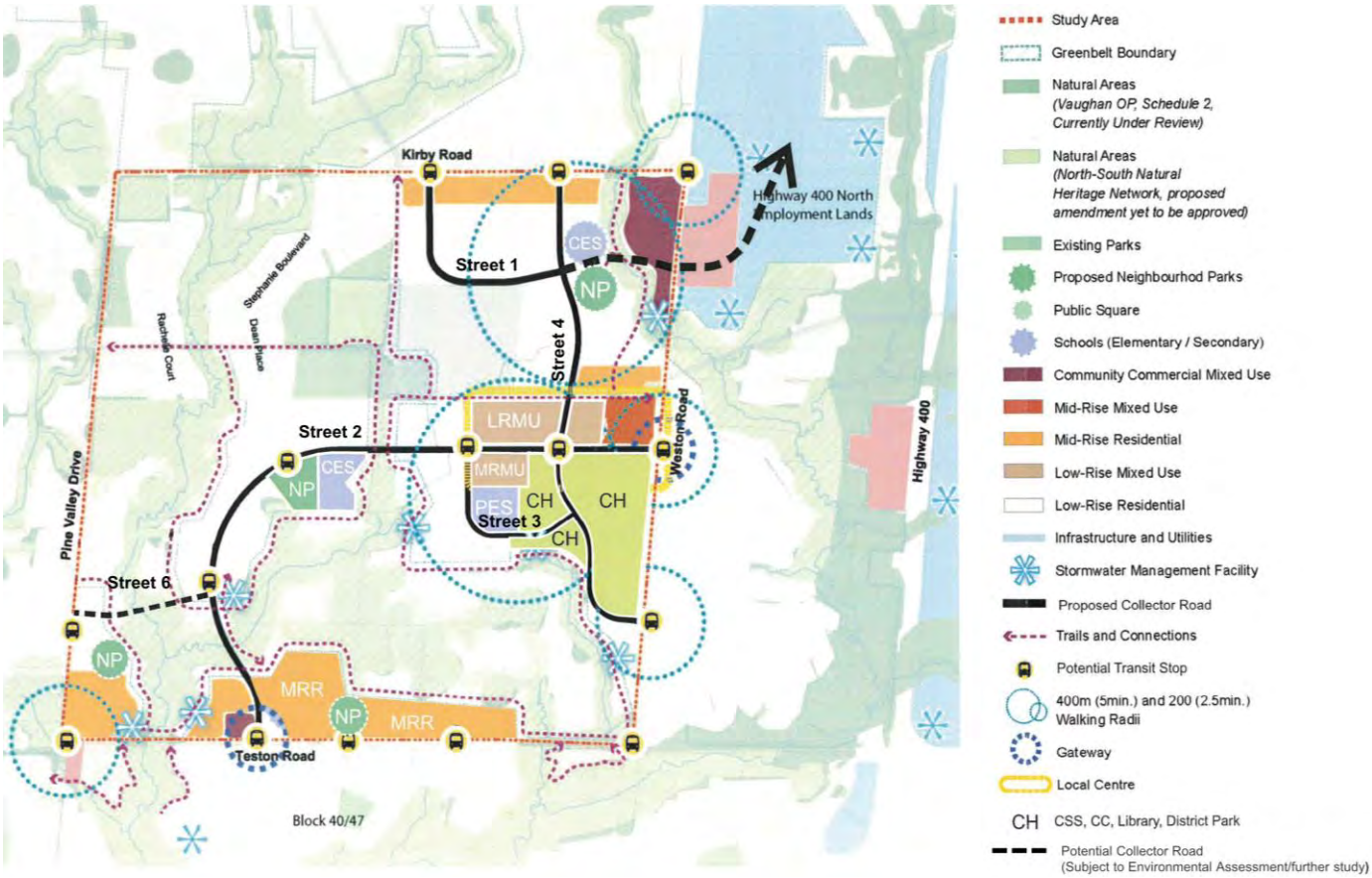

Exhibit 5-6: Refined City Network (December 2016)

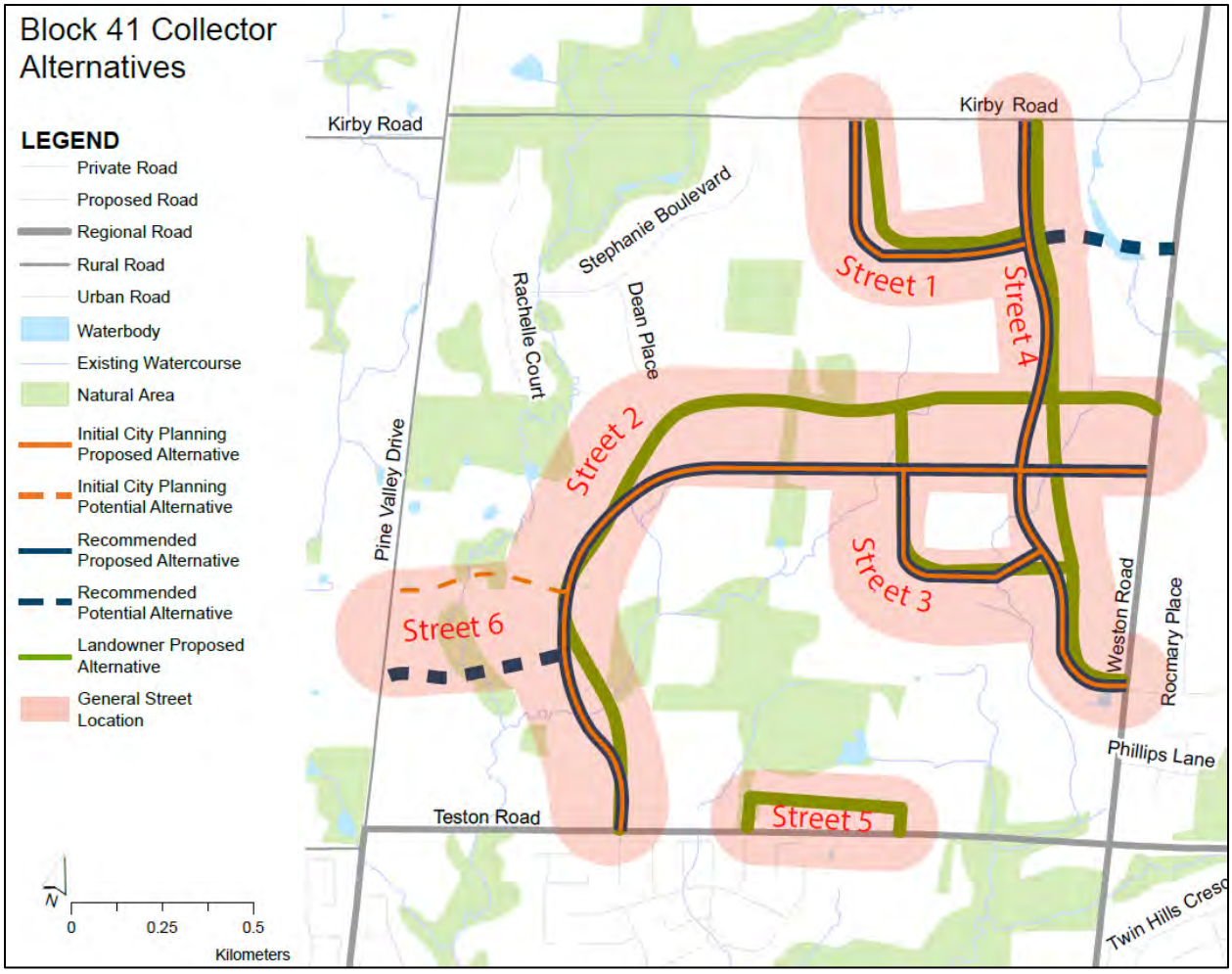

Exhibit 5-7: Block 41 Collector Alternatives Comparison

Table 5-1: Comparison of Collector Roads for Block 41 Alternatives

Street Name	Consistencies	Differences
1	• Connection to Kirby Road and Street 4	• Alternative 3 connection to Kirby Road is futher west • Alternative 3 extends to connect to Keele Street and Block 34
2	• Provides connections to Weston Road, Teston Street, Street 3, and Street 4 • Identical alginment in Alternatives 2 and 3	• Alternative 1 alignment differs on the north-south segment of the Street
3	• Provides connections to Street 2 and Street 4 • Identical alignment in Alternatives 2 and 3	• There is no curvatuve in the connection to Street 4 in Alternative 1
4	• Provides connections to Kirby Road, Weston Road, Street 1, Street 2, and Street 3 • Idential alignment in Alternatives 2 and 3	• Less curvatuve in the alignment in Alternative 1
5	• *N/A*	• Not identified in Alternatives 2 or 3
6	• Provides connection to Pine Valley Drive in Alternative 2 and 3	• Not identified in Alternative 1 • Alignment in Alternative 2 is further north than Alterantive 3

5.3 Evaluation Criteria

The alternatives were evaluated against the following major criteria:

- Transportation
- Natural Environment
- Socio-Economic Environment
- Cost and Implementation

The indicators used in the evaluation of the alternatives are documented and described in **Table 5-2**.

The sub-criteria are weighted equally; therefore the total score for each criterion is the average score of the sub-criteria. However, each of the major criteria carries different weightings at a qualitative level when compared against each other.

Table 5-2: Evaluation Criteria

CRITERIA	INDICATORS
TRANSPORTATION	
Network and system connectivity, mobility and accessibility *Promote accessibility for all travel modes to adjacent land uses for users of all ages and abilities, and aligned with VOP 4.1.1.1, 4.2.1.20, and 4.2.1.23.*	• Builds a finer-grain collector road system • Network connectivity to provincial and regional road network • Network continuity between adjacent concession blocks • Facilitates higher occupancy travel • Appropriate network configuration and intersection spacing
Active Transportation *Pedestrian and bicycle friendly neighbourhoods*	• Connectivity to the Regional active transportation network • Provides safer walking and cycling facilities tthrough the community and to/from potential future transit stops
Transit **Capitalize on transit investment** *Promotes reliable, convenient and seamless transit*	• Integrated multimodal connectivity to Metrolinx (GO Station and associated transit infrastructure) and YRT transit networks • Facilitates transit routing, service and operations
NATURAL ENVIRONMENT	
Natural Areas *Affects/Potential for impact to natural heritage*	• *Qualitative* assessment of road improvements in greenbelt areas or significant woodlands • New water crossings
Environmentally Sensitive Areas *Affects/Potential for impacts to designated ESA*	• *Qualitative* assessment of road improvements adjacent to/within designated Environmentally Sensitive Areas (ANSI, ESA, PSW, etc)
Habitat Areas *Affects/Potential for impacts (Endangered Species)*	• *Qualitative* assessment of potential for effects on designated wildlife, fish / aquatic habitat areas
Surface water, groundwater Affects/potential for impacts	• *Qualitative* assessment of impact to surface water runoff

CRITERIA	INDICATORS
	• *Qualitative* assessment of impact to groundwater quality • Provides opportunities to provide green infrastructure and improve stormwater management
SOCIO-ECONOMIC ENVIRONMENT	
Heritage Resources and Archaeological Features	• *Qualitative* assessment of road improvement adjacent to/within significant built heritage resources/ archaeological areas.
Economic Growth *Supports employment areas*	• Supports Highway 400 North Employment Areas
Active and Healthy Community	• Supports new transit oriented development • Provides direct routes to increase walkability and promote cycling • Minimizes tailpipe emissions by providing direct routes and reducing auto reliance
IMPLEMENTATION	
Capital Costs	• Network / improvement costs
Maintenance and Operational Costs	• Maintenance and operational costs

5.4 Assessment of Alternatives

Table 5-3 documents the detailed assessment of the alternatives based on the evaluation criteria presented in the previous section. It is noted that the comments focus specifically on collector road impacts.

Table 5-3: Assessment of Alternatives

CRITERIA	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
TRANSPORTATION			
Network and system connectivity, mobility and accessibility *Promote accessibility for all travel modes to adjacent land uses for users of all ages and abilities and aligned with VOP 4.1.1.1, 4.2.1.20, and 4.2.1.23.*	• **North:** provides two connections to Kirby Road • **East:** provides two connections to Weston Road • **South:** provides three connections to Teston Road • **West:** does not provide any connections to the West side of the Block	• **North:** provides two connections to Kirby Road • **East:** provides two connections to Weston Road • **South:** provides one connection to Teston Road • **West:** potential connection to Pine Valley Drive	• **North:** provides two connections to Kirby Road • **East:** provides three connections to Weston Road and would connect to adjacent Block 34 • **South:** provides one connection to Teston Road • **West:** potential connection to Pine Valley Drive
Active Transportation *Pedestrian and bicycle friendly neighbourhoods*	• No active transportation facilities identified	• Trail system identified along natural heritage corridors and the TCPL	• Trail system identified along natural heritage corridors and the TCPL
Transit **Capitalize on transit investment** *Promotes reliable, convenient and seamless transit*	• Collector roads will be accessible for transit vehicles • Decreased network connectivity to Regional Road network does not facilitate transit vehicles	• Collector roads will be accessible for transit vehicles • Additional collector road connections to Regional Roads facilities transit vehicles	• Collector roads will be accessible for transit vehicles • Additional collector road connections to Regional Roads facilities transit vehicles
NATURAL ENVIRONMENT			
Natural Areas *Affects/Potential for impact to natural heritage*	• Street 2 crosses the East Humber River	• Street 2 crosses the East Humber River	• Street 2 crosses the East Humber River • Extension of Street 1 to Weston Road crosses a environmental significant area and the East Humber River • Street 6 crosses a wetlands and woodlands
Environmentally Sensitive Areas *Affects/Potential for impacts to designated ESA*	• Crosses 2 environmentally sensitive areas	• Crosses 3 environmentally sensitive areas	• Crosses 4 environmentally sensitive areas
Habitat Areas *Affects/Potential for impacts (Endangered Species)*	• Street 2 crosses a critical habitat in the souther end towards Teston Road	• Street 2 crosses a critical habitat in the souther end towards Teston Road	• Street 2 crosses a critical habitat in the southern end towards Teston Road • Street 6 crosses a critical habitat
Surface water, groundwater *Affects/potential for impacts*	• Minimal paved surfaces	• Addition of Street 6 increases the area of paved surfaces and crosses wetlands	• Exention of Street 1 and the addition of Street 6 increases the area of paved surfaces and are crossing wetlands

CRITERIA	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Heritage Resources and Archaeological Features	• Collector network does not impact any heritage resource or archaeological features	• Collector network does not impact any heritage resource or archaeological features	• Collector network does not impact any heritage resource or archaeological features
SOCIO-ECONOMIC ENVIRONMENT			
Economic Growth *Supports employment areas*	• Provides 2 connections to Highway 400 Employment Area	• Provides 2 connections to Highway 400 Employment Area	• Provides 3 connections to Highway 400 Employment Area
Active and Healthy Community	• Connection to adjacent community in southwest corner of Block 34	• Connection to adjacent community in southwest corner of Block 34	• Connection to adjacent community in southwest corner of Block 34 • Street 1 Extension into Block 34 increases connectivity to adjacent Block
IMPLEMENTATION			
Capital Costs	• As the collector network does not cross significantly environmentally sensitive features, it has a lower capital cost	• The construction of Street 6 results in a higher capital cost as it crosses an environmentally sensitive area	• Extension of Street 1 and the addition of Street 6 result in a higher capital cost, especially due to the environmentally sensitive areas they cross
Maintenance and Operational Costs	• Fewer roads result in a lower maintenance and operational cost	• Additional roads result in a lower maintenance and operational cost	• Additional roads result in a higher maintenance and operational cost

5.5 Evaluation of Alternatives

Table 5-4 illustrates ratings for the criteria. Criteria are rated on a 3-point scale from least supportive (○) to most supportive (●).

Table 5-4: Evaluation of Block 41 Collector Road Alternatives

CRITERIA	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
TRANSPORTATION			
Network and system connectivity, mobility and accessibility *Promote accessibility for all travel modes to adjacent land uses for users of all ages and abilities*	○	◑	●
Active Transportation *Pedestrian and bicycle friendly neighbourhoods*	○	●	●
Transit **Capitalize on transit investment** *Promotes reliable, convenient and seamless transit*	◑	◑	●
NATURAL ENVIRONMENT			
Natural Areas *Affects/Potential for impact to natural heritage*	●	◑	○
Environmentally Sensitive Areas *Affects/Potential for impacts to designated ESA*	●	◑	○
Habitat Areas *Affects/Potential for impacts (Endangered Species)*	●	◑	○
Surface water, groundwater *Affects/potential for impacts*	●	◑	○
Heritage Resources and Archaeological Features	●	●	●
SOCIO-ECONOMIC ENVIRONMENT			
Economic growth *Supports employment areas*	○	○	●
Active and Healthy Community	◑	◑	●
IMPLEMENTATION			
Capital Costs	●	◑	○
Maintenance and Operational Costs	●	●	●

As mentioned previously, the sub-criteria are equally weighted while the major criteria carry different weightings. The problem and opportunity statement identified for this study seeks to determine optimal network solutions for the broader transportation network considering the study area as a whole. The evaluation is thus weighted more heavily for transportation network benefits. Following the completion of the Transportation Master Plan, individual projects will be assessed for natural environment, socio-economic, and cost and implementation at a finer level of detail.

Table 5-5 provides the relative weighting considered in the overall evaluation summary. Each full circle in a category counts as one point, a half circle is a half point, and an empty circle represents zero points. An alternative can score a maximum of 8 points based on the weighting factor.

Table 5-5: Relative TMP Criteria Weighting

Criteria	Weighting Factor
Transportation	✓✓✓
Natural Environment	✓✓
Socio-Economic Environment	✓✓
Cost and Implementation	✓

Table 5-6 illustrates the overall evaluation of the alternatives dependent on the weighting factor. ***The Refined City Network, Alternative 3, is the preferred collector network for Block 41.***

Table 5-6: Overall Evaluation of Alternatives for Block 41

Criteria	Alternative 1	Alternative 2	Alternative 3
Transportation	○	◑	●
Natural Environment	●	◑	○
Socio-Economic Environment	◑	◑	●
Implementation	●	●	◑
OVERALL SCORE	4 SCREEN OUT	4.5 SCREEN OUT	5.5 CARRY FORWARD

5.6 Detailing of the Preferred Collector Network

Additional discussion on the roadways identified but flagged as subject to further revision are discussed in the following sections.

5.6.1 Street 1 Extension to Block 34

The Street 1 extension would provide an additional connection to Weston Road, Block 34, and would curve north to connect to Kirby Road. However this connection crosses a section of the East Humber River. As a result, it is recommended that this extension from Street 4 to Weston Road is constructed as an active transportation connection to minimize the effect on the natural environment. The active transportation connection would allow pedestrians and cyclists to connect from Block 41 to Block 34 and has a minimal right-of-way, minimizing the natural environmental impact.

The Street 1 extension to Block 34 will be carried forward as an active transportation only connection.

5.6.2 Street 6 Connection to Pine Valley Drive

Street 6 would provide a direct connection between Street 2 to Pine Valley Drive. However, connection would cross the Natural Heritage Network, wetlands, woodlands, and a critical habitat that was documented by the MNRF.

The Street 6 connection was initially added to facilitate a major north-south arterial connection to the GTA West Corridor which planned for an interchange at Pine Valley Drive. As the Provincial Environmental Assessment for the Corridor is on hold, it is recommended that the corridor is protected for a potential road corridor in the future, should the GTA West Corridor be built.

As a result of the severe environmental impacts of this crossing, it is recommended that Street 6 would instead provide an active transportation connection as this type of connection has a minimal right-of-way and can be integrated with the existing natural features. This would provide a connection for pedestrians and cyclists from Street 2 to Pine Valley Drive.

The Street 6 connection to Pine Valley Drive will be carried forward as an active transportation only connection.

5.6.3 Separated Cycling Facilities

Through the development of the Secondary Plan and the NVNCTMP and in consultation with City staff, separated cycling facilities are recommended on Street 2 and Street 4.

5.6.4 Recommended Road Classifications

Based on the transportation analysis provided in the NVNCTMP, it is recommended that the roads identified in the Draft Block 41 Secondary Plan be designated as minor collector roads.

6 Preferred Block 41 Transportation Network

Based upon the analysis presented, the preferred Block 41 Land Use Plan and Multi-Modal Transportation Network, were presented at the Block 41 public hearing February 13, 2019. The Land Use Plan and Multi-Modal Transportation Network are presented in **Exhibit 6-1** and **Exhibit 6-2**, respectively.

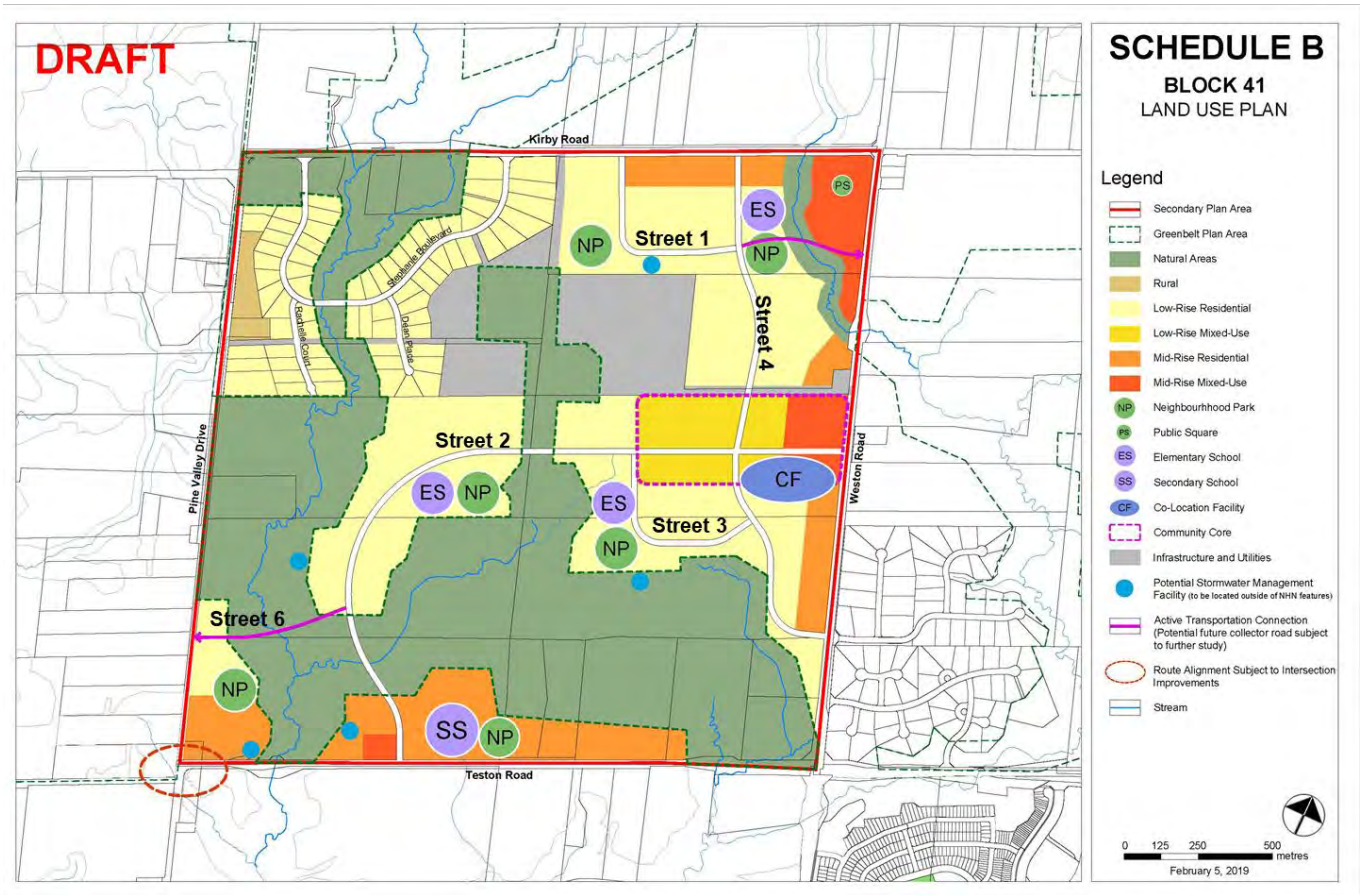

Exhibit 6-1: Block 41 Draft Land Use Plan
Source: Block 41 Public Hearing, February 13, 2019

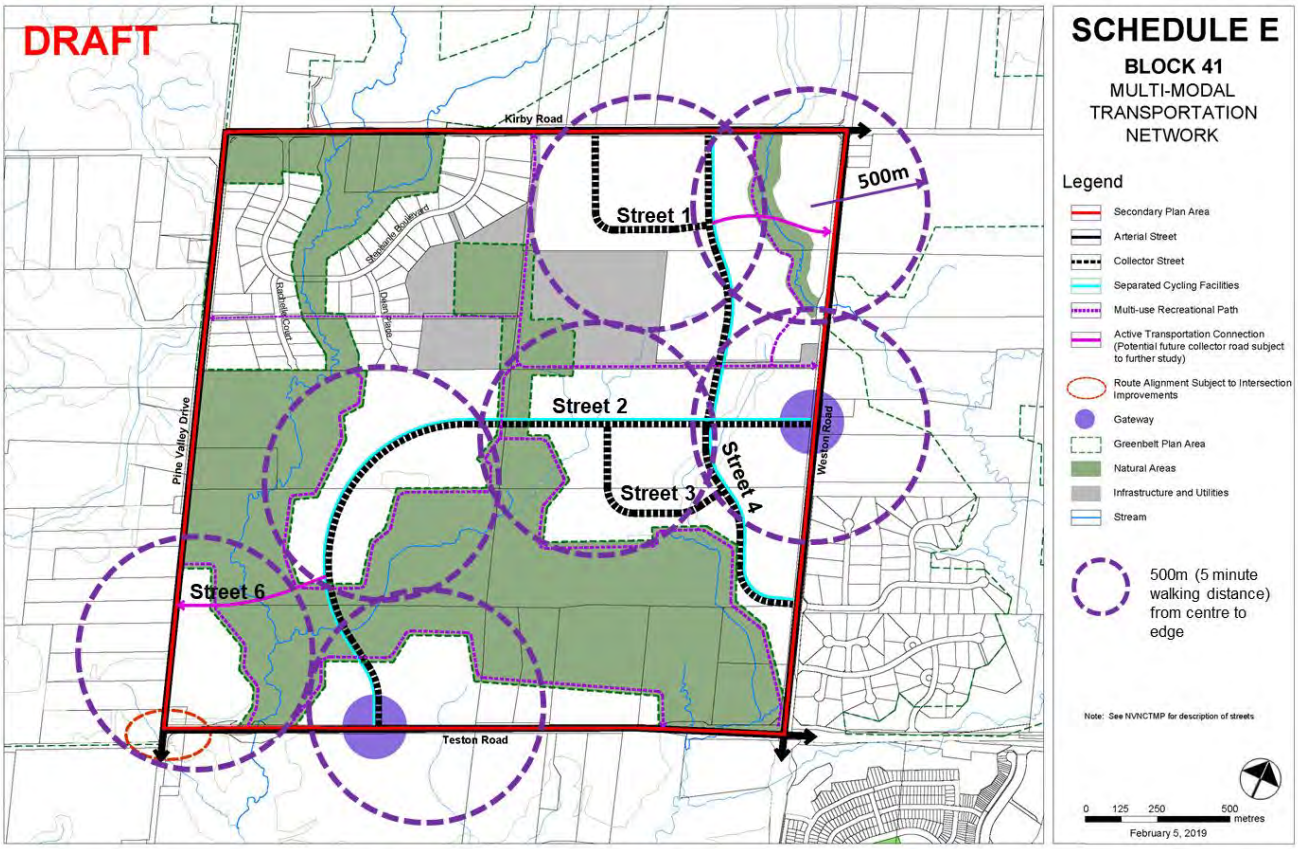

Exhibit 6-2: Block 41 Draft Multi-Modal Transportation Network
Source: Block 41 Public Hearing, February 13, 2019

Appendix C: Public Consultation

City of Vaughan

January 2019

hdrinc.com 100 York Boulevard, Suite 300, Richmond Hill, ON, CA L4B 1J8
(289) 695-4600

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Appendix C4: Stakeholder Workshop

Appendix C5: PIC#1 Materials

Appendix C6: PIC#2 Materials

Appendix C7: Public Comments

1 Public Consultation

Public consultation was carried out throughout the study, following Phases 1 and 2 of the Municipal Class EA process. Engagement with key stakeholders included landowners, community associations, governmental agencies, and indigenous peoples. Consultation activities included public notices, outreach at different community events, Stakeholder Workshops, technical advisory committee meetings, two Public Information Centres, and a project website.

Public notices were published throughout the study. The following notices and date of posting are summarized in **Table 1-1**. Copies of the notices are included in **Appendix C1**.

Table 1-1: NVNCTMP Study Notifications

Notice	Notification Details
Notice of Commencement	• Issued in the Vaughan Citizen Newspaper on July 23, 2015 • Posted on project website www.nvnctmp.ca/
Notice of Public Information Centre #1	• Issued in the Vaughan Citizen Newspaper on October 1 and October 8, 2015 • Posted on project website www.nvnctmp.ca/
Notice of Public Information Centre #2	• Issued in the Vaughan Citizen Newspaper on March 23, 2017 and March 30, 2017 • Posted on project website www.nvnctmp.ca/
Notice of Completion	• TBD

1.1 Consultation Stakeholders and Committees

A project website was developed for the study and was accessible at www.nvnctmp.ca. The website was updated at key points throughout the study. It provided members of the public and those interested in the study with information on the study background, project updates, interactive comment forms, public information centre display materials and the ability to contact the project team directly.

In addition to the project website and public information centres, a number of consultation events were held to engage stakeholders and commenting agencies.

1.1.1 Technical Advisory Committee

A Technical Advisory Committee (TAC) was formed for the study and consisted of members from the following groups:

- Ministry of Transportation Ontario
- Metrolinx
- York Region / YRT
- Toronto Region Conservation Authority
- Ministry of Natural Resources and Forestry
- Ministry of the Environment and Climate Change

- King Township
- Town of Richmond Hill
- TransCanada Pipelines Limited
- SmartCommute North Toronto-Vaughan

Two TAC meetings were held throughout the study. The first engaged the TAC during Phase 1 on August 6, 2015, to seek input on the study process and issues. One of the key takeaways from TAC Meeting #1 included the need to coordinate with the ongoing York Region Transportation Master Plan which was subsequently completed in 2016. Discussion also focused on the Kirby GO Station which was at that time still under consideration, but subsequently approved by the Metrolinx Board in June 2016. The presentation and meeting minutes from TAC Meeting #1 are included in this report in **Appendix C3**.

TAC Meeting #2 was held during Phase 2 of the study on March 10, 2017, where the TAC reviewed the Alternative Solutions and the Preferred Alternative. Comments were received on the need to clearly establish the rationale for the recommended road networks within the New Community Areas and the major environmental crossings in the study area from MNRF and TRCA. This resulted in refined analysis to support the recommendations. The presentation and meeting minutes from TAC Meeting #2 are included in this report in **Appendix C3**.

1.1.2 Stakeholder Group

A Stakeholder Group was invited to participate in the study through a workshop at the outset of the Study. The Stakeholder Group included:

- Ward 1 Councillor Marilyn Iafrate
- Ward 3 Councillor Rosanna DeFrancesca
- Ward 4 Councillor Sandra Yeung Racco
- Kleinburg and Area Ratepayers Association
- Millwood Woodend Ratepayers Association
- Vellore Woods Ratepayers Association
- Mackenzie Ridge Ratepayers Association
- Block 41 Participating Landowners
- Block 27 Participating Landowners
- Vaughan 400 Landowners Group (Block 34 & 35 West)
- Rizmi Holdings / Milani Group
- Maplewood Ravines Community
- Cam Lo Vuong Buddhist Community Temple
- Vaughan BUG (Bicycle User Group)
- Indigenous group representatives (detailed in the following section)

1.1.3 Indigenous Peoples Consultation

Representatives from the following indigenous groups were contacted at key points during the study:

- Huron-Wendat First Nation

- Kawartha Nishnawbe First Nation
- Mississaugas of the New Credit First Nation
- Six Nations of the Grand River Territory
- Metis Nation of Ontario
- Alderville First Nation
- Beausoleil First Nation
- Chippewas of Georgina Island First Nation
- Rama First Nation
- Curve Lake First Nation
- Hiawatha First Nation
- Mississaugas of Scugog Island First Nation
- Williams Treaties First Nations
- Chiefs of Ontario Environmental Coordinator

Representatives were included in the mailing list for the project, and were contacted via study notices throughout the study (Notice of Commencement, Notice of Public Information Centre and Notice of Completion), and were also invited to participate in the Stakeholder Group.

Through communications with the Huron-Wendat First Nations, several Huron-Wendat archaeological sites were identified within the Study Area, and as such the potential for uncovering new sites is also high. Any proposed future improvements should consider input and feedback from the respective groups and determine ways to avoid or mitigate any anticipated impacts. Details on communications with First Nations groups are provided in **Appendix C2,** while communications with MNRF, TRCA, and MOECC are documented in **Appendix C3.**

1.2 Consultation Events

1.2.1 Community Outreach

The NVNCTMP Study Team attended two community events in an effort to reach and further engage the public in the planning process. The Binder Twine Festival in Kleinburg was attended on September 12th, 2015 and the Woodbridge Fall Fair was attended on October 10th, 2015.

Attendees at the events were asked about their top transportation concerns and their vision for the NVNCTMP study area. The top three concerns were listed as traffic congestion, operational concerns, and lack of public transportation. While the top concerns focused on the transportation network, the top vision identified for the NVNCTMP study area was *fostering green space, with a focus on preserving nature*. Subsequent visions for the study area, in order of priority, include: *improved cycling and pedestrian infrastructure*, *improved public transit service*, and finally *increased connectivity of the road network*.

1.2.2 Stakeholder Workshop #1

The first stakeholder workshop was held on August 19th, 2015. The workshop was attended by 24 stakeholders representing landowners and developers, several ratepayer associations, First Nations and Aboriginal groups, Vaughan Bicycle User Group (BUG) and City of Vaughan staff

from the Policy Planning and Development Engineering and Infrastructure Planning departments.

This workshop's purpose was to develop input on a future vision for the North Vaughan and New Communities Transportation Master Plan (NVNCTMP). Stakeholders provided input through small group discussions on:

- Ideas for developing a vision for the NVNCTMP,
- Opportunities to support the growth and development of North Vaughan and New Communities,
- Key issues/challenges to be addressed in the study,
- Ideas for improving transportation service in North Vaughan and New Communities for cycling, walking, and transit, as well as road widenings and expansions, and
- Prioritizing new and improvements to transportation infrastructure.

Key findings of the discussions are summarized in **Table 1-2** and the stakeholder workshop presentation and consultation summary report are provided in **Appendix C4**.

Table 1-2: Stakeholder Workshop #1 Key Findings

Topic	Input
Ideas and key words for the vision	• Connectivity • Multi-modal • Functional
Opportunities	• Improve east-west connectivity by removing road jogs, widening Kirby Road, missing links on Kirby and Teston, prioritizing connectivity to Highway 400 • Create an interconnected 24 hour transit network • Integrate multi-use pathways • Don't just plan for it – build it
Challenges	• Community buy-in and support • Transportation connections through environmental features • Barriers for developing an integrated multi-modal network • Slow implementation, financial impediments
Ideas for Transportation Improvements	Cycling: • More separated and multi-use paths (i.e. cycle tracks) • Create cycling-supportive infrastructure (parking, lockers, etc.) • More east-west cycling connections • Bike racks on transit • Public-private partnerships Walking • Improve walking-supportive infrastructure (lighting, shade trees, amenities, rest stops) • Meet accessibility standards • Sidewalks on both sides of collector roads • Coordinate with transit stops • Avoid dead-ends in trail systems • Green space trails • Integrated system in new community areas, connections to parks, community facilities, transit • Grid system road network allows for shorter pedestrian routes YRT Service • Promote ridership outside of peak hours • More permeability through blocks – improve efficiency of route planning • Safety at bus stops, bus friendly roads • Seamless transit pass (integrated fare) • Improve first and last mile connections and accessibility • Special shuttles • Real-time information GO Transit Service • More integration with YRT and TTC • Improve accessibility • Transit hubs versus massive parking lots – dual purpose parking • Dual connection to and from employment areas • All-day two-way service • Improve first and last mile connections and accessibility Roads • Build road capacity before development • Widen road shoulders for cyclists • Improve streetscaping when widening • Introduce centre boulevard on arterials – human scale

Topic	Input
	• Add pedestrian friendly features at community gateways • Hydro-wires underground
Prioritizing Infrastructure	Participants were given an imaginary budget, and were asked to allocate funds towards roads, transit, walking, and cycling: • Roads 37.5% • Transit 37.5% • Sidewalks / Trails 25%

1.2.3 Public Information Centre #1

Public Information Centre #1 (PIC) was held on October 13, 2015 at the Vaughan Civic Centre. Notice for the PIC was published on October 1st and October 8th in the Vaughan Citizen and posted on the project website at www.nvnctmp.ca/. Letters and emails were distributed to Stakeholder Groups (landowners, First Nations and aboriginal groups, ratepayer groups and the Vaughan Bicycle User Group) and to members of the Technical Advisory Committee (TAC), which includes Ministry of Transportation, Metrolinx, TRCA, MNRF, Town of Richmond Hill, Township of King and York Region).

The purpose of PIC #1 was to provide information about the study, to learn about issues and challenges and to develop input on a future vision for the NVNCTMP. The PIC was attended by 15 residents who provided input through information stations on:

- Existing conditions,
- Ideas for developing a vision for the TMP,
- Opportunities for supporting growth and development of North Vaughan and New Communities,
- Key issues/challenges to be addressed in the TMP, and
- Ideas for improving transportation service in North Vaughan and New Communities for cycling, walking, transit, road widenings, and expansions.

Feedback was generally similar to Stakeholder Workshop #1. Key findings from PIC #1 are summarized in **Table 1-3**. Based on the feedback received from the public throughout Phase 1 of the NVNCTMP study, it is clear that the general public is concerned with traffic congestion and is open to improvements to other travel modes including improved transit service with regard to both local transit service provided by YRT and Regional transit service provided by Metrolinx, as well as improvements to the active transportation network.

PIC#1 presentation, display boards, and a consultation summary report are provided in **Appendix C5**.

Table 1-3: PIC #1 Key Findings

Topic	Public Input
Ideas and key words for the vision	• Connectivity • Access • Safety
Opportunities	• Kirby and Teston connections • Integrate active transportation: from where people live to their destination with priority for connecting to GO Stations, TTC, schools, big stores and medical facilities. • Address missing links to create better connections. • Take advantage of diagonal lines short cuts for pedestrians. • Integrate (opens up access & opportunities) active transportation with active recreation areas, Natural Heritage Systems and in the Greenbelt.
Challenges	• Existing traffic congestion and lack of east-west connections • Kleinburg traffic infiltration of through traffic on quiet residential roads • Transit linkages • Access to trails • Cycling and walking connections over Highway 400 • Congestion at GO Stations • Steep grades for trucks
Ideas for Transportation Improvements	• More designated / separated bike lanes • More transit service to key destinations • Crosswalks on Regional Roads, better crossings of highways • More frequent GO service to Toronto • Efficient, multimodal connections to GO stations • A new GO station serving demand from the north of the study area • More road capacity east-west • Right-in right-out accesses to reduce stoplights • Address missing links • Synchronize traffic lights • Separated cycling and walking connections over Highway 400
Prioritizing Infrastructure	Participants were given an imaginary budget, and asked to allocate spending for roads, transit, walking and cycling. A roughly equal amount was identified for all modes, with marginally more emphasis on roads and cycling.

Key findings of the public engagement sessions indicate the need for **a balanced transportation system** in the study area with emphasis on preserving natural heritage, providing improved active transportation connections, better public transit, and finally more efficient vehicular travel.

1.2.4 Public Information Centre #2

Public Information Centre #2 was held on April 5th, 2017 at Vaughan City Hall in conjunction with the Public Open House for the Block 27 Secondary Plan and related Kirby GO Transit Hub Sub-study. Notice for the PIC was published on March 23, 2017 on the project website at www.nvnctmp.ca/ and in the Vaughan Citizen on March 23, 2017, and March 30, 2017. Email invitations were distributed to Stakeholder Groups (landowners, First Nations and aboriginal groups, ratepayer groups and the Vaughan Bicycle User Group) and to members of the TAC.

The purpose of PIC #2 was to provide information about the study, including:

- Planned growth,
- Network alternatives to address the problems and opportunities for the TMP,
- Evaluation of alternatives,
- Recommended transportation network, and
- Block 27 recommended road network.

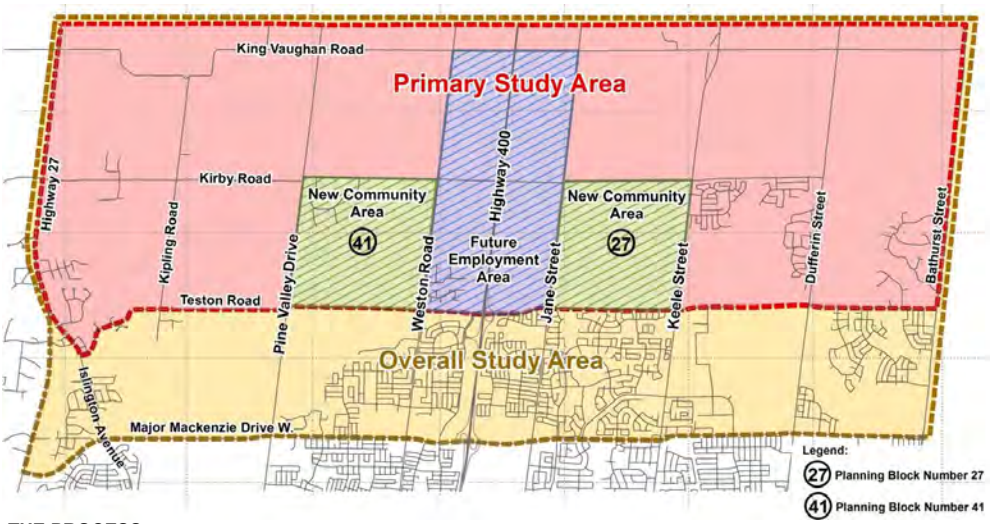
A copy of the PIC #2 Presentation and display boards are provided in **Appendix C6**. The feedback from PIC#2 focused on Kirby GO Station and the land use surrounding the northeast corner of Block 27. These comments were incorporated into to the Block 27 Secondary Plan and taken into consideration in the transportation planning work in support of these areas.

Appendix C1
Public Notices

NOTICE OF STUDY COMMENCEMENT
NORTH VAUGHAN & NEW COMMUNITIES TRANSPORTATION MASTER PLAN

THE STUDY

Vaughan's Official Plan 2010 has identified two new community areas, Block 27 and Block 41, to be added as the urban expansion areas to accommodate future growth to a planning horizon of 2031. The preparation of Secondary Plans for these new community areas is a requirement of both the Regional Official Plan and the Vaughan Official Plan 2010. Integration of transportation and land use planning is essential in ensuring that new communities are complete, compact, cost effective and sustainable. Therefore, in support of the on-going development of these Secondary Plans, a Transportation Master Plan (TMP) for the new communities and the surrounding north Vaughan area is being carried out in parallel and in close coordination with the Secondary Plan studies. (See Map for Study Area) The TMP will define policies, programs and infrastructure required to meet the City's mobility needs and provide a context for transportation decisions. The objective of this plan is to look at both internal and external factors that contribute to achieving sustainable transportation for residents and businesses while ensuring recommendations of the plan address needs ranging from immediate to future growth.



THE PROCESS

This notice signals the commencement of the North Vaughan & New Communities Transportation Master Plan (NVNCTMP) Study. This Study will follow the master planning process described in the Municipal Engineers Association Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011), including consultation with the public and stakeholders, consideration of all reasonable alternatives, a high level assessment of the effects on the environment at the network level, evaluation of alternatives highlighting advantages and disadvantages, and full documentation of the process providing a traceable rationale for conclusions reached. The Master Plan process shall satisfy Phase I and II of the Municipal Class EA for recommended infrastructure improvements.

The NVNCTMP study will be carried out in two Phases:

- Phase 1 will assess existing conditions, context and challenges; and
- Phase 2 will develop network plans and identify triggers for different infrastructure needs, phasing of projects and an action plan.

CONSULTATION

A key component of the study will be consultation with stakeholders, regulatory agencies and the general public. Anyone with an interest in this study has the opportunity to get involved and provide input. Two Public Information Centres (PIC) will be held during the study to inform the process, present findings and receive public input. A notice providing the time and location of the PIC will be published in local newspapers and posted on the study website.

CONTACTS

If you require additional information or would like to be placed on the project contact list, please visit us on the study website at www.nvnctmp.ca or contact one of the individuals below:

Winnie Lai, P. Eng.
City of Vaughan Project Manager
Development Engineering &
Infrastructure Planning Services
City of Vaughan, 2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Phone: 905-832-8585 Ext. 8192
Email: winnie.lai@vaughan.ca

OR

Tyrone Gan, P. Eng.
Consultant Project Manager
HDR Corporation
100 York Boulevard, Suite 300
Richmond Hill, ON L4B 1J8
Phone: 289-695-4622
Email: tyrone.gan@hdrinc.com

Information is being collected under the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

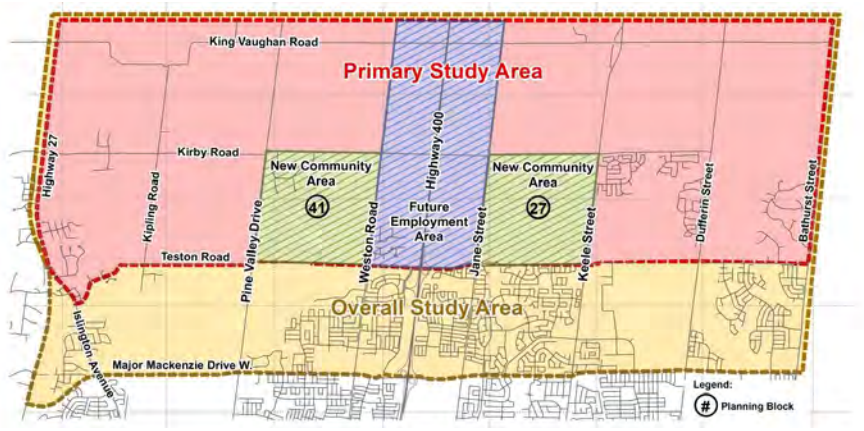
ANDREW PEARCE, Director of Development Engineering and Infrastructure Planning Services

This Notice first issued July 23, 2015

NOTICE OF PUBLIC INFORMATION CENTRE #1
NORTH VAUGHAN & NEW COMMUNITIES TRANSPORTATION MASTER PLAN

THE STUDY

A Transportation Master Plan (TMP) for the New Community Areas and the surrounding north Vaughan area is being carried out in parallel and in close coordination with the Block 27 and Block 41 Secondary Plan studies (See Map for Study Area). The TMP will define policies, programs and infrastructure required to meet the City's mobility needs and provide a context for transportation decisions. The objective of this plan is to look at both internal and external factors that contribute to achieving sustainable transportation for residents and businesses while ensuring recommendations of the plan address needs ranging from immediate to future growth.



THE PROCESS

This Study will follow the master planning process described in the Municipal Engineers Association Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011), including consultation with the public and stakeholders, consideration of all reasonable alternatives, a high level assessment of the effects on the environment at the network level, evaluation of alternatives highlighting advantages and disadvantages, and full documentation of the process providing a traceable rationale for conclusions reached. The Master Plan process shall satisfy Phase I and II of the Municipal Class EA for recommended infrastructure improvements:

- Phase I will assess existing conditions, context and challenges; and
- Phase II will develop network plans and identify triggers for different infrastructure needs, phasing of projects and an action plan.

PUBLIC INFORMATION CENTRE (PIC) #1

PIC#1 will introduce the study to you, provide information on the existing conditions and seek your input on identifying opportunities, challenges and ideas for the future vision of transportation in the study area.

Date: **Tuesday, October 13th, 2015**
Time: **6-7 PM: Drop-in Interactive Open House**
7-7:30 PM: Presentation
7:30-9 PM: Drop-in Interactive Open House
Location: **Vaughan City Hall, Multi Purpose Room, Main Floor**
2141 Major Mackenzie Drive

CONTACTS

If you require additional information or would like to be placed on the project contact list, please visit us on the study website at www.nvnctmp.ca or contact one of the individuals below:

Winnie Lai, P. Eng.
City of Vaughan Project Manager
Development Engineering &
Infrastructure Planning
City of Vaughan, 2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Phone: 905-832-8585 Ext. 8192
Email: winnie.lai@vaughan.ca

OR

Tyrone Gan, P. Eng.
Consultant Project Manager
HDR Corporation
100 York Boulevard, Suite 300
Richmond Hill, ON L4B 1J8
Phone: 289-695-4622
Email: tyrone.gan@hdrinc.com

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ANDREW PEARCE,
Director of Development Engineering and Infrastructure Planning Services

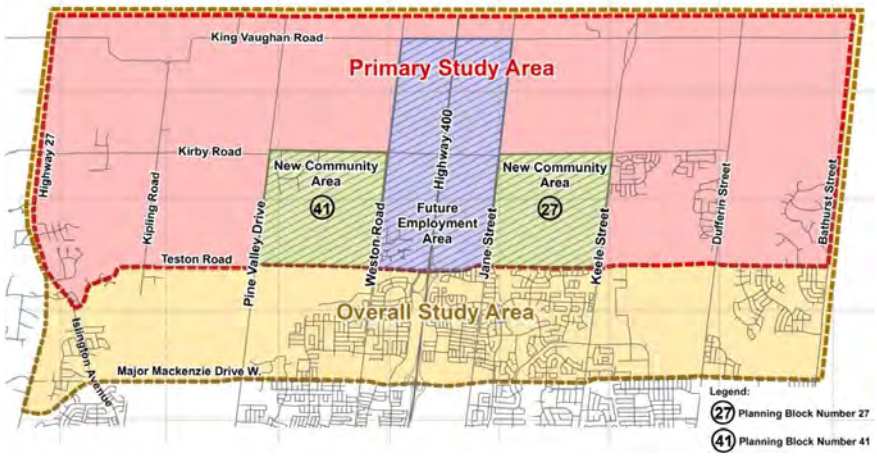
This Notice first issued October 1st, 2015

NOTICE OF PUBLIC INFORMATION CENTRE #2

NORTH VAUGHAN & NEW COMMUNITIES TRANSPORTATION MASTER PLAN

THE STUDY

A Transportation Master Plan (TMP) for the New Community Areas and the surrounding north Vaughan area is being carried out in parallel and in close coordination with the Block 27 and Block 41 Secondary Plan studies (See Map for Study Area). The TMP will define policies, programs and infrastructure required to meet the City's mobility needs and provide a context for transportation decisions. The objective of this plan is to look at both internal and external factors that contribute to achieving sustainable transportation for residents and businesses while ensuring recommendations of the plan address needs ranging from immediate to future growth.



THE PROCESS

This Study follows the master planning process described in the Municipal Engineers Association Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011), including consultation with the public and stakeholders, consideration of all reasonable alternatives, a high level assessment of the effects on the environment at the network level, evaluation of alternatives highlighting advantages and disadvantages, and full documentation of the process providing a traceable rationale for conclusions reached. The Master Plan process shall satisfy Phase I and II of the Municipal Class EA for recommended infrastructure improvements:

Phase I - Completed, which assessed existing conditions, context and challenges; and
Phase II – Technical analysis and incorporating input from the public and stakeholders, project team will develop network plans and identify triggers for different infrastructure needs, phasing of projects and an action plan.

PUBLIC INFORMATION CENTRE (PIC) #2

PIC#2 identifies alternative transportation networks, recommends a preferred transportation network, and seeks your input on specific elements of the preferred network in the study area. This meeting is coordinated with the final public open house for the Block 27 Secondary Plan Study and the associated Kirby Transit Hub Sub-Study.

Date: **Wednesday, April 5th, 2017**
Time: **6 - 9 PM**
Location: **Vaughan City Hall, Multi Purpose Room, Main Floor**
2141 Major Mackenzie Drive

CONTACTS

If you require additional information or would like to be placed on the project contact list, please visit us on the study website at www.nvnctmp.ca or contact one of the individuals below:

Winnie Lai, P. Eng.
City of Vaughan Project Manager
Development Engineering &
Infrastructure Planning Services
City of Vaughan, 2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Phone: 905-832-8585 Ext. 8192
Email: winnie.lai@vaughan.ca

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Consultant Project Manager
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Phone: 289-695-4622
Email: tyrone.gan@hdrinc.com

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ANDREW PEARCE, Director of Development Engineering and Infrastructure Planning Services

This Notice first issued March 23, 2017

Appendix C2

First Nations Correspondence

Chai, Jonathan

From: dsimpson@aldervillefirstnation.ca
Sent: October-07-15 2:58 PM
To: Chai, Jonathan
Subject: Re: North Vaughan and New Communities TMP - Public Information Centre #1

From: dsimpson@aldervillefirstnation.ca
Subject: Please forward any correspondence...

Dave Simpson was elected to Alderville's Council. Please forward any emails or correspondence to Skye Anderson.
email: sanderson@alderville.ca
phone: 905-352-2662
-------- Original Message --------

Government Services Building
22 Winookeeda Street
Curve Lake, Ontario K0L1R0

Phone: 705.657.8045
Fax: 705.657.8708
www.curvelakefirstnation.ca

1 October, 2015

Jonathan Chai
100 York Boulevard, Suite 300
Richmond Hill, Ontario L4B 1J8

Dear Jonathan Chai,

RE: North Vaughan and New Communities Transportation Master Plan

I would like to acknowledge receipt of your correspondence, which was received on 7/28/2015 regarding the above noted project.

As you may be aware, the area in which your project is proposed is situated within the Traditional Territory of Curve Lake First Nation. Our First Nation's Territory is incorporated within the Williams Treaties Territory and is the subject of a claim under Canada's Specific Claims Policy. We strongly suggest that you provide Karry Sandy-Mackenzie, Williams Treaty First Nation Claims Coordinator, 8 Creswick Court, Barrie, ON L4M 2S7, with a copy of your proposal as your obligation to consult to also extend to the other First Nations of the Williams Treaties.

Although we have not conducted exhaustive research nor have we the resources to do so, Curve Lake First Nation Council is not currently aware of any issues that would cause concern with respect to our Traditional, Aboriginal and Treaty rights.

Please note that we have particular concern for the remains of our ancestors. Should excavation unearth bones, remains or other such evidence of a native burial site or any Archaeological findings, we must be notified without delay. In the case of a burial site, Council reminds you of your obligations under the Cemeteries Act to notify the nearest First Nation Government or other community of Aboriginal people which is willing to act as a representative and whose members have a close cultural affinity to the interred person. As I am sure you are aware, the regulations further state that the representative is needed before the remains and associated artifacts can be removed. Should such a find occur, we request that you contact our First Nation immediately.

Curve Lake First Nation also has available, trained Archaeological Liaisons who are able to actively participate in the archaeological assessment process as a member of a field crew, the cost of which will be borne by the proponent.

Government Services Building
22 Winookeeda Street
Curve Lake, Ontario K0L1R0

Phone: 705.657.8045
Fax: 705.657.8708
www.curvelakefirstnation.ca

If any new, undisclosed or unforeseen issues should arise, that has potential for anticipated negative environmental impacts or anticipated impacts on our Treaty and Aboriginal rights we require that we be notified regarding these as well.

Thank you for recognizing the importance of consultation and respecting your duty to consult obligations as determined by the Supreme Court of Canada.

Should you have further questions or if you wish to hire a liaison for a project, please feel free to contact our Lands and Resources Consultation Liaisons by email, Melissa Dokis at MelissaD@curvelake.ca, or by phone at 705-657-8045.

Yours sincerely,

Chief Phyllis Williams
Curve Lake First Nation

Chai, Jonathan

From: Mark LaForme <Mark.LaForme@newcreditfirstnation.com>
Sent: July-30-15 2:46 PM
To: Megan DeVries; Chai, Jonathan
Cc: Bryan LaForme; Fawn Sault
Subject: RE: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop

Hello Jonathon,

As follow-up to the email Megan sent you, I would like to thank you for the invitation to your Stakeholder Workshop, we appreciate you reaching out to us. While Megan DeVries and Fawn Sault of this office will attend the workshop, I would just like to clarify that, because we are not a "stakeholder" this will not be deemed as consultation with the Mississaugas of the New Credit First Nation (MNCFN). As a First Nation with our own government, and this office being a department of that government, our status is beyond that of stakeholder. As such, and pursuant to the Duty to Consult, we require a separate and distinct process for consultation, engagement, and accommodation with all crown agencies, proponents, and developers undertaking projects on our Traditional Lands. The Mississaugas of the New Credit First Nation has claims in the project area, as part of our Traditional Territory, asserting our unextinguished Aboriginal Title, most particularly with respect, but not limited, to the waters. These claims have been submitted to both the federal and provincial governments through the proper legal processes.

Given the above, we look forward to meeting one-on-one with the appropriate party at the earliest stage of this project to determine a more meaningful and comprehensive consultation and engagement strategy with the MNCFN. At MNCFN-DOCA, we have the capacity to engage at the earliest stages of an Environmental Assessment, then into an Archaeological Assessment, and finally to the completion of construction of the project.

I look forward to hearing from you in the immediate future to initiate our engagement in this project.

Sincerely,

Mark LaForme
Director
Department of Consultation and Accommodation
Mississaugas of New Credit First Nation
6 First Line, R.R. #6
Hagersville, Ontario
N0A 1H0

Tel: (905) 768-4260
Fax: (905) 768-9751
Cell: (289) 527-6577
Email: mark.laforme@newcreditfirstnation.com

_____
From: Megan DeVries
Sent: Thursday, July 30, 2015 2:04 PM
To: Chai, Jonathan
Cc: Mark LaForme; Fawn Sault
Subject: RE: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop

Hi Jonathon,

Thank you for the invitation to the Stakeholder Workshop. I discussed the invite with Mark LaForme, and he would like both myself and Fawn Sault, our Consultation Manager, to attend. I've CC'd her on this reply; could you forward her an invite as well?

Thank you for reaching out to us. We are excited to learn more about the project and work more closely with you in the future.

Sincerely,

Megan DeVries, M.A.
Archaeological Coordinator
Department of Consultation and Accommodation
Mississaugas of the New Credit First Nation

Phone: (905) 768-4260
Cell: (289) 527-2763
Email: megan.devries@newcreditfirstnation.com

-----Original Appointment-----
From: Chai, Jonathan [mailto:Jonathan.Chai@hdrinc.com]
Sent: Wednesday, July 29, 2015 7:27 PM
To: Megan DeVries
Subject: FW: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop
When: Wednesday, August 19, 2015 1:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: City of Vaughan City Hall - Committee Room 242

Good Afternoon Megan:

You are invited to attend the first North Vaughan and New Communities Transportation Master Plan Stakeholder Workshop.

Please find attached a letter sent to Mark LaForme through regular mail along with the Notice of Study Commencement (note that I did not have Mark's email address, so this invitation is only being sent to you).

The Stakeholder Groups include

- Landowners,
- Ratepayers,
- First Nations, and
- Aboriginal groups

The workshop will provide an opportunity to introduce the project team to the stakeholders. Project Team will present the background information, opportunities and constraints of the study area, and allow for visioning input to the project.

Please advise us of your attendance through this email invitation. Should there be other persons your organization that should be included in this meeting or if you will be sending a delegate, please let us know.

Agenda to the meeting will follow as it gets closer to the meeting date:

Wednesday, August 19, 2015
1:00pm to 4:30pm
City of Vaughan City Hall
Committee Room 242

<< File: Notice of Study Commencement TMP Final.pdf >>

Stakeholder Workshop # 1

Jonathan Chai, P.Eng.
Senior Transportation Engineer

HDR
100 York Boulevard, Suite 300
Richmond Hill, ON L4B 1J8
D 289.695.4629
jonathan.chai@hdrinc.com

hdrinc.com/follow-us

<< File: Mark LaForme.pdf >> << File: ATT21633 1.jpg >>

Chai, Jonathan

From: Melanie Vincent <melanievincent21@yahoo.ca>
Sent: August-10-15 9:46 AM
To: Chai, Jonathan
Cc: Gan, Tyrone; winnie.lai@vaughan.ca; Simon Picard; Louis Lesage
Subject: Re: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop
Attachments: North Vaughan and New Communities Transportation Master Plan.pdf

Hello Jonathan, unfortunately we are unable to attend this workshop, however, we have identified several huron-wendat archaeological sites in the project area with the GIS map, see attached. The potential for uncovering new sites is also high. Our Nation is to be involved in all aspects of this project and we would like to know what the next steps are. Thank you!

Mélanie Vincent, M.Sc.AJS
Cell / SMS: (418) 580-4442
melanievincent21@yahoo.ca
Gestion MV Management
Gestion de projets / Project Management

From: "Chai, Jonathan" <Jonathan.Chai@hdrinc.com>
To: Melanie Vincent <melanievincent21@yahoo.ca>
Cc: "Gan, Tyrone" <Tyrone.Gan@hdrinc.com>; "winnie.lai@vaughan.ca" <winnie.lai@vaughan.ca>
Sent: Tuesday, August 4, 2015 10:32 AM
Subject: RE: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop

Good morning Melanie,

Please find attached the GIS files related to cultural heritage.

Thank you for your input to our study.

Jonathan Chai, P.Eng.
D 289.695.4629

hdrinc.com/follow-us

From: Melanie Vincent [mailto:melanievincent21@yahoo.ca]
Sent: August-03-15 9:43 AM
To: Chai, Jonathan; winnie.lai@vaughan.ca
Subject: Re: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop

Good morning, Would it be possible to receive the shapefiles of the project area, so that we can determine if the Huron-Wendat Nation has any archaeological sites in the project area or its buffer zone, and this also allows us to determine the potential for finding HWN's heritage, as we proceed this way for any project on our ancestral lands in Ontario. We are not sure we will participate on August 19th, we will let you know. Thank you!

Mélanie Vincent, M.Sc.AJS
Cell / SMS: (418) 580-4442
melanievincent21@yahoo.ca
Gestion MV Management
Gestion de projets / Project Management

From: "Chai, Jonathan" <Jonathan.Chai@hdrinc.com>
To: "melanievincent21@yahoo.ca" <melanievincent21@yahoo.ca>; "louis.lesage@cnhw.qc.ca" <louis.lesage@cnhw.qc.ca>; "simon.picard@cnhw.qc.ca" <simon.picard@cnhw.qc.ca>
Sent: Wednesday, July 29, 2015 7:24 PM
Subject: FW: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop

Good Afternoon:

You are invited to attend the first North Vaughan and New Communities Transportation Master Plan Stakeholder Workshop.

Please find attached a letter sent to you through regular mail along with the Notice of Study Commencement.

The Stakeholder Groups include

- Landowners,
- Ratepayers,
- First Nations, and
- Aboriginal groups

The workshop will provide an opportunity to introduce the project team to the stakeholders. Project Team will present the background information, opportunities and constraints of the study area, and allow for visioning input to the project.

Please advise us of your attendance through this email invitation. Should there be other persons your organization that should be included in this meeting or if you will be sending a delegate, please let us know.

Agenda to the meeting will follow as it gets closer to the meeting date:

Wednesday, August 19, 2015
1:00pm to 4:30pm
City of Vaughan City Hall
Committee Room 242

.

Stakeholder Workshop # 1

Jonathan Chai, P.Eng.
Senior Transportation Engineer

HDR
100 York Boulevard, Suite 300
Richmond Hill, ON L4B 1J8
D 289.695.4629
jonathan.chai@hdrinc.com

hdrinc.com/follow-us

Chai, Jonathan

From: Dave Mowat <dmowat@scugogfirstnation.com>
Sent: August-14-15 1:14 PM
To: Chai, Jonathan
Subject: Aug 19th

Hi Jonathan:

I'm planning on attending next week.

Dave Mowat
Consultaton, Lands and Membership Supervisor
Mississaugas of Scugog Island First Nation
22521 Island Rd.
Port Perry, ON, L9L 1B6
Phone: (905) 985-3337 ext. 263
Fax: (905) 985-8828
Email: dmowat@scugogfirstnation.com

Chai, Jonathan

From: Fawn Sault <Fawn.Sault@newcreditfirstnation.com>
Sent: August-25-15 12:12 PM
To: Lai, Winnie; Megan DeVries; Mark LaForme
Cc: Chai, Jonathan; Gan, Tyrone; Sue Cumming; Sicilia, Anna; Pearce, Andrew
Subject: RE: North Vaughan and New Communities

Hello Winnie,

Right now our September calendar is filling up very quickly. How does the 9th, 10th or 11th look for you? If that is too soon we will have to push it to the last week of September possibly the first week of October. Let me know what your calendars look like.

Miigwetch,

Fawn D. Sault
Consultation Manager
Department of Consultation and Accommodation
Mississauga of the New Credit First Nation
Office 905-768-4260
Fax 905-768-9751
Cell 289-527-6580

From: Lai, Winnie [mailto:Winnie.Lai@vaughan.ca]
Sent: Tuesday, August 25, 2015 11:53 AM
To: Megan DeVries; Fawn Sault; Mark LaForme
Cc: Chai, Jonathan; Gan, Tyrone; Sue Cumming; Sicilia, Anna; Pearce, Andrew
Subject: RE: North Vaughan and New Communities

Hello Megan & Fawn,

Thank you for attending our first Stakeholder Workshop last Wednesday, in which we were able collect many valuable input from different stakeholder groups including yours.

Our project team and City Staff would be delighted to meet with you to answer any question you may have regarding the project and the work involved. Please let us know the date, time and place you have in mind to meet. We look forward to meeting with you.

I have also forwarded your request for information in regards to Block 27 to the planning team and they will be in touch with you to provide the information requested.

Thank you.

Regards,

Winnie Lai
Development Engineering & Infrastructure Planning Services
Ext. 8192

From: Chai, Jonathan [mailto:Jonathan.Chai@hdrinc.com]
Sent: Friday, August 21, 2015 4:32 PM
To: Lai, Winnie
Cc: Gan, Tyrone; cumming1@total.net
Subject: FW: North Vaughan and New Communities

Winnie,
See email from Mississaugas of the New Credit First Nation below

Jonathan Chai, P.Eng.
D 289.695.4629

hdrinc.com/follow-us

From: Megan DeVries [mailto:Megan.DeVries@newcreditfirstnation.com]
Sent: August-21-15 1:48 PM
To: Chai, Jonathan
Cc: Fawn Sault; Mark LaForme
Subject: North Vaughan and New Communities

Hello Jonathan,

Thank you for the invitation to the stakeholder workshop held on Wednesday, August 19. It was a good opportunity for us to have an introduction to the New Communities project and for myself and Fawn to be involved in some of the discussions.

At this point, we would like to extend an invitation to yourself and other representatives as necessary from the city of Vaughan and HDR to visit our community and meet with our Department about the project. We have numerous questions about the project and the work involved – beyond the transportation concerns – and we felt that the workshop on Wednesday was not the best forum for these specific questions, though we certainly learned a great deal while there.

Additionally, while we have received the Secondary Plan for Block 41 sent by Lori Macri on August 17 and it is under review, we were wondering if you had similar information available for Block 27? In particular, we request that you provide us with all environmental and archaeological reports associated with the New Communities project. Furthermore, if there is environmental and/or archaeological fieldwork scheduled in association with the project, please be aware that MNCFN employs Field Liaison Representatives who **must** be on location during that work. If additional work is scheduled, please notify us as soon as possible so that we may work together to discuss and arrange for MNCFN's participation. If this fieldwork is being carried out in these areas by other proponents (e.g. residential developers), we would greatly appreciate your assistance in putting us in contact with them directly.

Thank you once again for inviting us to participate in Wednesday's Stakeholder Workshop. We look forward to hearing from you to arrange a meeting. As Fawn is our Consultation Manager, all consultation matters should flow directly through her and she would be happy to work with you to schedule the meeting.

Sincerely,

Megan DeVries, M.A.
Archaeological Coordinator
Department of Consultation and Accommodation
Mississaugas of the New Credit First Nation

Phone: (905) 768-4260
Cell: (289) 527-2763
Email: megan.devries@newcreditfirstnation.com

Chai, Jonathan

From: Fawn Sault <Fawn.Sault@newcreditfirstnation.com>
Sent: October-26-15 8:25 PM
To: Lai, Winnie
Cc: Chai, Jonathan; Hubjer, Selma; Rende, Daniel; Rossi, Melissa; Sicilia, Anna; Mark LaForme; Megan DeVries
Subject: Re: North Vaughan and New Communities Transportation Master Plan - meeting tomorrow

Hi Winnie,

No need for an agenda. Nothing formal. We are just looking for a review of the project up to date and a willingness for discussion and involvement.

Miigwetch
Sent from my BlackBerry 10 smartphone on the Bell network.

From: Lai, Winnie
Sent: Monday, October 26, 2015 1:21 PM
To: Fawn Sault
Cc: 'Chai, Jonathan'; Hubjer, Selma; Rende, Daniel; Rossi, Melissa; Sicilia, Anna; Mark LaForme; Megan DeVries
Subject: RE: North Vaughan and New Communities Transportation Master Plan - meeting tomorrow

Hello Fawn,

In preparation for our meeting with you tomorrow, we would like to know if you have an agenda set up for the meeting and also if you are looking for information from us that we can get ready for?
If you have specific questions you would like to ask our project team or the planners for Blocks 41 and 27, we would appreciate if you could let us know ahead of time so we can prepare with relevant information.

Thanks again and we look forward to meeting with your tomorrow.

Regards,

Winnie Lai
Development Engineering & Infrastructure Planning
Ext. 8192

From: Chai, Jonathan [mailto:Jonathan.Chai@hdrinc.com]
Sent: Friday, July 31, 2015 12:13 AM
To: Lai, Winnie
Cc: cumming1@total.net; Gan, Tyrone
Subject: FW: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop

FYI
The New Credit First Nations are suggesting a separate meeting.

Jonathan Chai, P.Eng.
D 289.695.4629

From: Mark LaForme [mailto:Mark.LaForme@newcreditfirstnation.com]
Sent: July-30-15 2:46 PM
To: Megan DeVries; Chai, Jonathan
Cc: Bryan LaForme; Fawn Sault
Subject: RE: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop

Hello Jonathon,

As follow-up to the email Megan sent you, I would like to thank you for the invitation to your Stakeholder Workshop, we appreciate you reaching out to us. While Megan DeVries and Fawn Sault of this office will attend the workshop, I would just like to clarify that, because we are not a "stakeholder" this will not be deemed as consultation with the Mississaugas of the New Credit First Nation (MNCFN). As a First Nation with our own government, and this office being a department of that government, our status is beyond that of stakeholder. As such, and pursuant to the Duty to Consult, we require a separate and distinct process for consultation, engagement, and accommodation with all crown agencies, proponents, and developers undertaking projects on our Traditional Lands. The Mississaugas of the New Credit First Nation has claims in the project area, as part of our Traditional Territory, asserting our unextinguished Aboriginal Title, most particularly with respect, but not limited, to the waters. These claims have been submitted to both the federal and provincial governments through the proper legal processes.

Given the above, we look forward to meeting one-on-one with the appropriate party at the earliest stage of this project to determine a more meaningful and comprehensive consultation and engagement strategy with the MNCFN. At MNCFN-DOCA, we have the capacity to engage at the earliest stages of an Environmental Assessment, then into an Archaeological Assessment, and finally to the completion of construction of the project.

I look forward to hearing from you in the immediate future to initiate our engagement in this project.

Sincerely,

Mark LaForme
Director
Department of Consultation and Accommodation
Mississaugas of New Credit First Nation
6 First Line, R.R. #6
Hagersville, Ontario
N0A 1H0

Tel: (905) 768-4260
Fax: (905) 768-9751
Cell: (289) 527-6577
Email: mark.laforme@newcreditfirstnation.com

prohibited. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the Mississaugas of the New Credit First Nation.

From: Megan DeVries
Sent: Thursday, July 30, 2015 2:04 PM
To: Chai, Jonathan
Cc: Mark LaForme; Fawn Sault
Subject: RE: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop

Hi Jonathon,

Thank you for the invitation to the Stakeholder Workshop. I discussed the invite with Mark LaForme, and he would like both myself and Fawn Sault, our Consultation Manager, to attend. I've CC'd her on this reply; could you forward her an invite as well?

Thank you for reaching out to us. We are excited to learn more about the project and work more closely with you in the future.

Sincerely,

Megan DeVries, M.A.
Archaeological Coordinator
Department of Consultation and Accommodation
Mississaugas of the New Credit First Nation

Phone: (905) 768-4260
Cell: (289) 527-2763
Email: megan.devries@newcreditfirstnation.com

-----Original Appointment-----
From: Chai, Jonathan [mailto:Jonathan.Chai@hdrinc.com]
Sent: Wednesday, July 29, 2015 7:27 PM
To: Megan DeVries
Subject: FW: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop
When: Wednesday, August 19, 2015 1:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: City of Vaughan City Hall - Committee Room 242

Good Afternoon Megan:

You are invited to attend the first North Vaughan and New Communities Transportation Master Plan Stakeholder Workshop.

Please find attached a letter sent to Mark LaForme through regular mail along with the Notice of Study Commencement (note that I did not have Mark's email address, so this invitation is only being sent to you).

The Stakeholder Groups include

- Landowners,
- Ratepayers,
- First Nations, and
- Aboriginal groups

The workshop will provide an opportunity to introduce the project team to the stakeholders. Project Team will present the background information, opportunities and constraints of the study area, and allow for visioning input to the project.

Please advise us of your attendance through this email invitation. Should there be other persons your organization that should be included in this meeting or if you will be sending a delegate, please let us know.

Agenda to the meeting will follow as it gets closer to the meeting date:

Wednesday, August 19, 2015
1:00pm to 4:30pm
City of Vaughan City Hall
Committee Room 242

<< File: Notice of Study Commencement TMP Final.pdf >>

Stakeholder Workshop # 1

Jonathan Chai, P.Eng.
Senior Transportation Engineer

HDR
100 York Boulevard, Suite 300
Richmond Hill, ON L4B 1J8
D 289.695.4629
jonathan.chai@hdrinc.com

hdrinc.com/follow-us

<< File: Mark LaForme.pdf >> << File: ATT21633 1.jpg >>

your computer, including any attachment(s). Any unauthorized distribution, disclosure or copying of this message and attachment(s) by anyone other than the recipient is strictly prohibited.

Chai, Jonathan

From: Sicilia, Anna <IMCEAEX-_O=COV_OU=CITY_CN=RECIPIENTS_CN=VAUGHAN+2EPLN+2EGALAMBOA@vaughan.ca>
Sent: Friday, October 30, 2015 9:44 AM
To: 'fawn.sault@newcreditfirstnation.com'
Cc: Macri, Lori; Hassakourians, Armine; Rossi, Melissa; Lai, Winnie; Hubjer, Selma
Subject: Requested reports for the New Community Area Blocks 27 and 41 studies

Dear Fawn,

It was a pleasure meeting with you and Megan this past Tuesday to discuss the work that is being done through our New Community Area Secondary Plan Studies, and the North Vaughan and New Communities Transportation Master Plan. I especially appreciated your taking the time to explain some of the history respecting the Mississaugas of the New Credit First Nation Community.

I have looked into the status of the reports which you requested at our meeting; the environmental reports for the Block 41 area are completed and will be sent to you on a protected ftp site from our office administrator Lori Macri, later today. The Block 27 environmental work is still underway and will be forwarded to you as soon as it is completed.

The Sub-watershed studies for each of the blocks are also underway and are anticipated to be completed by the first quarter of 2016. I will send these reports to you as soon as they are available.

You had also requested the contact information for the lead consultants working with each of the block landowner groups, which I provide below:

1) New Community Area Block 27 : Nik Mracic of Cole Engineering, tel. 905-940-6161, ext. 466, nmracic@coleengineering.ca
2) New Community Area Block 41: Don Given of Malone, Given, Parsons, tel. 905-513-0170, dgiven@mgp.ca

Please contact me directly should you have additional questions respecting the above information.

Sincerely,
Anna

Anna Sicilia MCIP, RPP
Project Manager, New Community Areas
905-832-8585 ext.8063 | anna.sicilia@vaughan.ca

City of Vaughan | Policy Planning & Environmental Sustainability
2141 Major Mackenzie Drive, Vaughan, Ontario, L6A 1T1
www.vaughan.ca

Chai, Jonathan

From: Tera Beaulieu <tera_beaulieu@yahoo.ca>
Sent: August-17-15 4:20 PM
To: Chai, Jonathan
Subject: Fw: Fwd: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop
Attachments: Notice of Study Commencement TMP Final.pdf

Hello Jonathan,

Thank you for reaching out to the Toronto and York Region Metis Council (TYRMC). Unfortunately no one from our Council will be able to attend this workshop, but please do keep me apprised of future events.

Also, Robert Bird is no longer affiliated with the TYRMC and I am currently President. It would be appreciated if you could forward your correspondence directly to me.

Thanks,

Tera
~~~~~~~~~~~~~~
Tera Beaulieu, M.A., Ph.D. (Candidate)
President, Toronto & York Region Métis Council, Métis Nation of Ontario
Department of Applied Psychology & Human Development
OISE - University of Toronto
252 Bloor Street West, 7th floor, Room 7-230
Toronto, Ontario M5S 1V6
Tel. # : 416-889-6918
Email: tera_beaulieu@yahoo.ca
Twitter: @terabeaulieu
TYRMC website: http://www.torontoyorkmetis.com

----- Forwarded Message -----
From: Robert Bird <rbird.consulting@gmail.com>
To: Hank Rowlinson <hankr@metisnation.org>; Tera Beaulieu <tera_beaulieu@yahoo.ca>; Tera Beaulieu <t.beaulieu@utoronto.ca>
Sent: Wednesday, August 12, 2015 3:08 PM
Subject: Fwd: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop

---------- Forwarded message ----------
From: **Chai, Jonathan** <Jonathan.Chai@hdrinc.com>
Date: Wed, Aug 12, 2015 at 2:37 PM
Subject: RE: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop
To:

Hello ,
~~~~~~~~~~~~~~

We have yet to receive a reply from yourself or a representative about next week's Stakeholder meeting for the North Vaughan and New Communities Transportation Master Plan. Please advise of your attendance.

Thanks!

Jonathan Chai, P.Eng.
D 289.695.4629

hdrinc.com/follow-us

-----Original Appointment-----
From: Chai, Jonathan
Sent: July-29-15 5:50 PM
To: Chai, Jonathan;
Subject: North Vaughan and New Communities Transportation Master Plan - 1st Stakeholder Workshop
When: August-19-15 1:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: City of Vaughan City Hall - Committee Room 242

Good Afternoon:

You are invited to attend the first North Vaughan and New Communities Transportation Master Plan Stakeholder Workshop.

Please find attached a letter sent to you through regular mail along with the Notice of Study Commencement.

The Stakeholder Groups include

- Landowners,
- Ratepayers,
- First Nations, and
- Aboriginal groups

The workshop will provide an opportunity to introduce the project team to the stakeholders. Project Team will present the background information, opportunities and constraints of the study area, and allow for visioning input to the project.

Please advise us of your attendance through this email invitation. Should there be other persons your organization that should be included in this meeting or if you will be sending a delegate, please let us know.

Agenda to the meeting will follow as it gets closer to the meeting date:

Wednesday, August 19, 2015
1:00pm to 4:30pm
City of Vaughan City Hall
Committee Room 242

<< OLE Object: Picture (Device Independent Bitmap) >>

Stakeholder Workshop # 1

Jonathan Chai, P.Eng.
Senior Transportation Engineer

HDR
100 York Boulevard, Suite 300
Richmond Hill, ON L4B 1J8
D 289.695.4629
jonathan.chai@hdrinc.com

hdrinc.com/follow-us

Appendix C3
Agency Correspondence

Meeting Minutes

Project: North Vaughan and New Communities TMP

Subject: Technical Advisory Committee Meeting #1

Date: Thursday, August 06, 2015

Time: 2:00pm to 4:00pm

Location: Vaughan City Hall, Committee Room 242

Attendees:

Winnie Lai – City of Vaughan
Anna Sicilia – City of Vaughan
Melissa Rossi – City of Vaughan
Roy McQuillin – City of Vaughan
Eugene Fera – City of Vaughan
Michael Habib – City of Vaughan
Mike Cole – Township of King
Kevin Huang – TRCA
Megan Eplett – MNRF
Tyrone Gan - HDR
Jonathan Chai – HDR
Pallavi Saxena – Metrolinx
Dan Della Mora – MTO
Shahid Matloob – York Region
Shawn Smith – York Region
Augustine Ko – York Region
Steve Mota – York Region
Adrian Kawun – YRT/Viva

Regrets:

Armine Hassakourians – City of Vaughan
Margaret Mikolajczak – MTO
Johri Alka - Metrolinx
Ahsun Lee – Town of Richmond Hill
Darlene Presley – TCPL
Teresa Cline – York Region

	Topic	Action
1	**Introduction**	
2	**Purpose**	
3	**Schedule**	
4	**Study Overview and Critical Issues** • York Region in discussions with MTO about GTA West connection options at Highway 400 and to Regional Roads. YR will provide update. • What is the timing of GO Parking Expansion at King, Maple, Rutherford? • City noted that the development of this block is considering mixed use development surrounding a transit hub for YRT prior to the potential GO Station. • City noted that they will provide more refined forecasts for the study area.	York Region Metrolinx Info City (Policy Planning)

5	**Background Transportation Conditions**
	• YRT and Metrolinx expressed a desire to see 2031 travel patterns, particularly how they might change from existing patterns
	• YRT noted that current concept plan for Block 41 will not justify transit services. E-W collector to PVD will certainly help, however, a grid network within Block 41 will be more preferable.
	• York Region identified the need to accommodate active transportation across Highway 400 for both existing crossings and future midblock crossings.
	• Metrolinx expressed a desire to see 2031 mode share projections.
	• Metrolinx asked that we do NOT share GO station location options for the Stakeholder Workshop, and to share the presentation materials with them in advance.
	• Discussion about implementation timing of RER approximately within 10 years, which will impact mode share. Ensure RER info from Metrolinx website is noted.
	• York Region noted that a TDM strategy was missing from the presentation:
	  ○ Contact SmartCommute to identify their activities impacting the study area.
	  ○ Parking issues at the GO Stations
	  ○ Identify catchment areas, OD patterns
	• Metrolinx updated the group on the Kirby GO feasibility study
	  ○ Initiated in July 2015
	  ○ Currently gathering data including engaging property owners
	  ○ Study should be complete around January 2016
		HDR
		
		City / HDR
		City / HDR
		
		City / HDR
		City / HDR
		
		HDR
		
		HDR
		
		Info

6	**Transportation Needs**
	• Discussion about forecasts for beyond 2031 and Urban Boundary Expansion to include Blocks 28 and 42
	  ○ This study is planning for both with and without GTA West
	  ○ Region is reviewing the urban boundary and will decide by around November 2015
	  ○ If required, this study will treat this issue as a sensitivity test
	  ○ Any scenarios beyond 2031 should be aligned with Regional improvements
	• Discussion about how transportation influences Block Planning:
	  ○ City is planning according to mixed-use mobility hub guidelines
	  ○ Want a model solution in a greenfield situation
	  ○ Maximize the live-work relationship
	  ○ Provide opportunity for alternative modes
	  ○ Maximize accessibility and choice
	  ○ Transit service needs to be supported by development
		York Region / HDR
		
		Info

	○ Right types of employment and connectivity can improve live-work relationships • This study will inform future update of the City's Pedestrian and Cycling Master Plan specific to the study area ○ Check whether the Greenbelt Cycling Route passes through the study area ○ Regional scale trail system ○ King's Trail Master Plan • A TCPL loop was noted west of the study area • Block 27 NS collector should try to avoid extra crossings of the environmental lands	HDR Info City/HDR
7	**Next Steps** • Stakeholder Workshop August 19 • PIC#1 October 13 (tentative) • Next TAC Meeting February 2016	

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code Kleinburg. **Please enter your Work Postal Code:** _____

1) What <u>are your top concerns</u> within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Public transit increase is needed.
2. 427 extended to alleviate traffic.
3. better shoulders for cycling. (Paved, generous)

2) List some key words that describe <u>your vision</u> for the study area/ <u>suggestions for improvement</u>:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

❑ YES ❑ NO If yes, please provide your email address: Hugomarvin@rogers.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*.

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 1N2 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. observing new development in the area
2.
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☒ YES ☐ NO If yes, please provide your email address: eva.pulnicki@york.ca evapulnicki@rogers.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** M9V 3Y8

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. traffic on northbound Hwy 27 - late afternoon
2. " northbound on Islington Ave - late afternoon
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. better accomodation/room for drivers.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☒ YES ☐ NO If yes, please provide your email address: maria@mariamorgis.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

Hwy 27 & steeles. business owner lives in Kleinburg.

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L6A2R9 **Please enter your Work Postal Code:** _____

1) What <u>are your top concerns</u> within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Traffic is becoming a large problem
2.
3.

2) List some key words that describe <u>your vision</u> for the study area/ <u>suggestions for improvement</u>:

1. Improve the Hwy 400
2. more multi-use paths
3. Include more nature trails in plan
4. more parks
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

❑ YES ❑ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 1V7 **Please enter your Work Postal Code:** M9L 1Y3

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Widen Islington as traffic is bad during morning and after work commute.
2. Need buses that run on Sundays.
3. Better Flow on Weston & Hwy 7 with new condos getting built.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

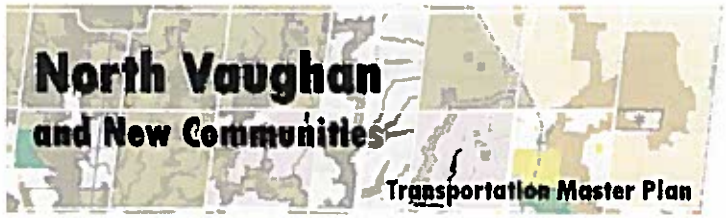
1. Better Public transit.
2. Same ticket for transit when you pass Steeles.
3. Hwy 427 extension.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☒ YES ☐ NO If yes, please provide your email address: laurameli@rogers.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN



HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4L 7T4 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Traffic Hwy 7 + Weston what is the plan with all the new condos?
2.
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. LACK OF ROAD SPACE (i.e) 4 LANES FOR: MAJOR MACK/ 27/ TESTON/ PINE VALLEY DRIVE
2. BEFORE ISSUING PERMITS FOR ANOTHER 30K POPULATION
3. → ANY HOPE OF THE GTA HWY BUILT IN THE NEXT 20 YEARS
   HW 400

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** L4K 3Y1

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. traffic and stop lights on major mak
2. traffic thru Kleinburg
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

❑ YES ❑ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 4E4 **Please enter your Work Postal Code:** L5N 6S8

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Respect Seniors – we have opinions!
2. Extend 427 to MAJOR MAC
3. Extend Major MAC
4. Build Hospital
5. Need Convenience Store

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4L 4E4 **Please enter your Work Postal Code:** L4L 5L5

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. shops (groceries, drug stores etc.)
2. transportation Major Mackenzie Rd. too many cars for size of road
3. public transportation (subway extension)

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. commercial area in Kleinburg
2. playground within the residential areas
3. traffic issues
4. hospital
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: allanp73@gmail.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. preserving greenspace
2. easy transportation
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. calm, peaceful community
2. easy access to Kleinburg town
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: navina.atwal@gmail.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L6J 1C8 **Please enter your Work Postal Code:** L5R 4R4

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. Expand Hwy 27 to 6-8 lanes → too much population for current roads
2. Extend 427 to King → " " " "
3. " Kirby to 4 lanes → " " " "

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. Proper infrastructure (Not in current plans)
2. Less dense housing.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: p_confortin@yahoo.ca

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 2V2 **Please enter your Work Postal Code:** _____

1) What <u>are your top concerns</u> within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Too much Congestion - too much traffic
2.
3.

2) List some key words that describe <u>your vision</u> for the study area/ <u>suggestions for improvement</u>:

1. No more houses to be built.
2. More parks
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☑ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code _____ **Please enter your Work Postal Code:** _____

1) What <u>are your top concerns</u> within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. traffic - wider roads
2. extend pine Valley - for the greater good not a small area
3. set up trains

2) List some key words that describe <u>your vision</u> for the study area/ <u>suggestions for improvement</u>:

1. greater good
2. community
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

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VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 2P5 **Please enter your Work Postal Code:** M5H 2P5

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. traffic front of high school
2. speed in quiet street
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. add bumps on quiet street.
2. drop off / pick off area in all high schools
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code _____ **Please enter your Work Postal Code:** L0J1C0

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Congestion on Islington Ave during rush hour
2. Parking on islington.
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☒ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

Technical Advisory Committee Meeting #2

March 10, 2016

VAUGHAN

HDR

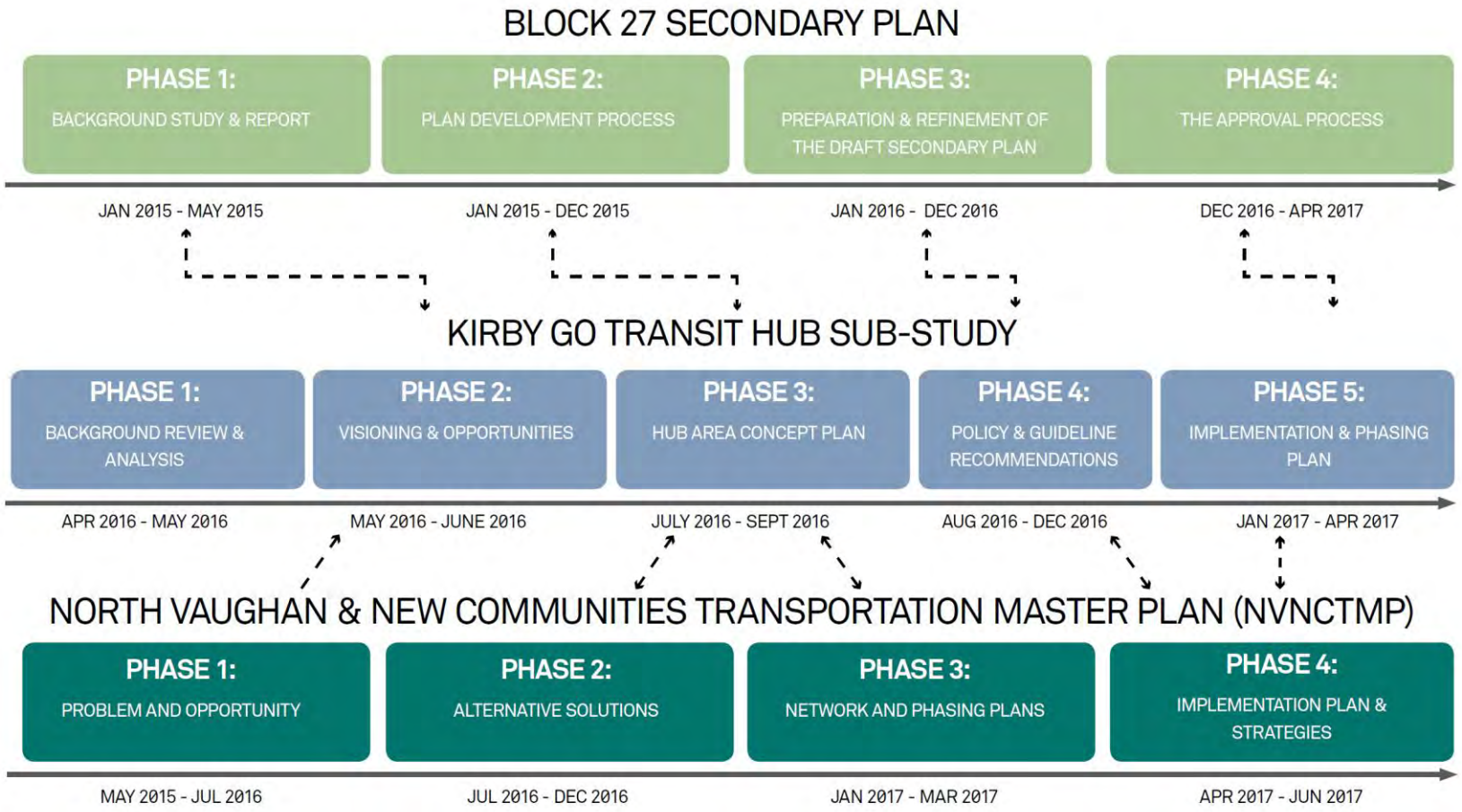
Agenda

1. Welcome and Introductions
2. Study Schedule
3. Purpose of the Meeting
4. Background Information
5. Network Alternatives
6. Evaluation of Alternatives
7. Kirby GO Station
8. Next steps

Study Schedule

- TAC #1 – August 6, 2015
- Stakeholder Visioning Workshop – August 19, 2015
- PIC #1 – October 13, 2015
- Phase 2 and Kirby GO Sub-study - 2016
- **TAC Meeting #2 – March 10, 2017** ← **We are here**
- PIC #2 – April 5, 2017 (tentative)
- Draft Report Q3 2017

Study Overview and Related Studies



Purpose

- Support **all modes** of travel
- Inclusive **public consultation**
- Support and promote **employment opportunities**
- Support development of **new community** areas
- Connect **existing communities**
- Support establishment of **Kirby GO Station**

What we heard

Opportunities

- Kirby and Teston connections
- Integrate active transportation

Challenges

- Existing traffic congestion
- Lack of east-west connections
- Transit linkages
- Access to trails
- Cycling and walking connections across Hwy 400

Ideas for Improvement

- More designated / separated bike facilities
- Improved transit service to key destinations
- Crosswalks on Region Roads
- Improved east-west road capacity

Prioritizing Infrastructure

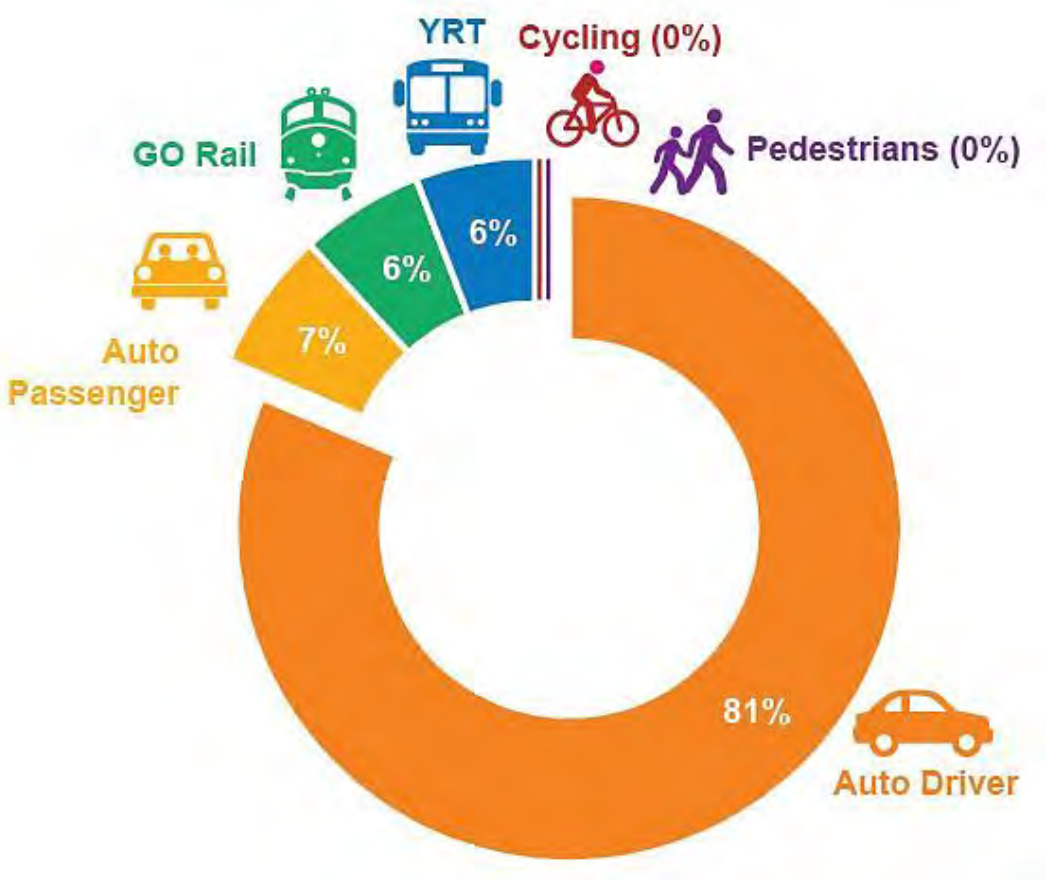
- Balanced priority for all travel modes

Background Information

Travel Patterns

Modal Share

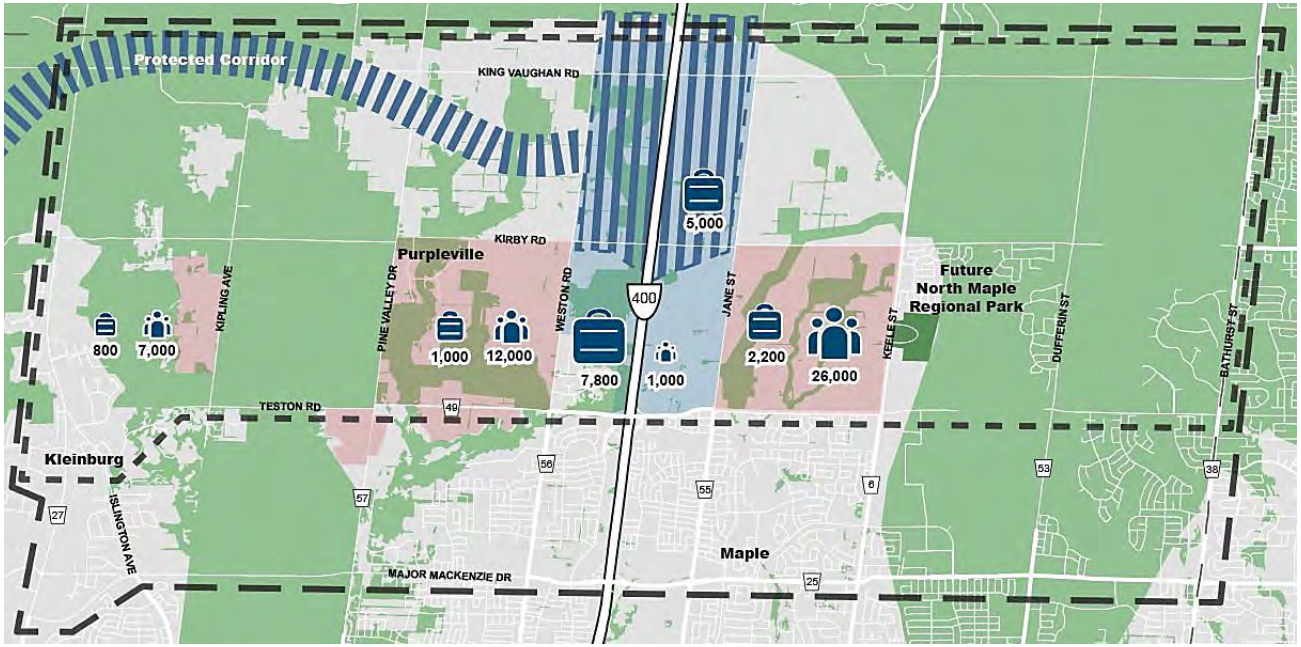
88% of work trips in the AM peak hour are made by car

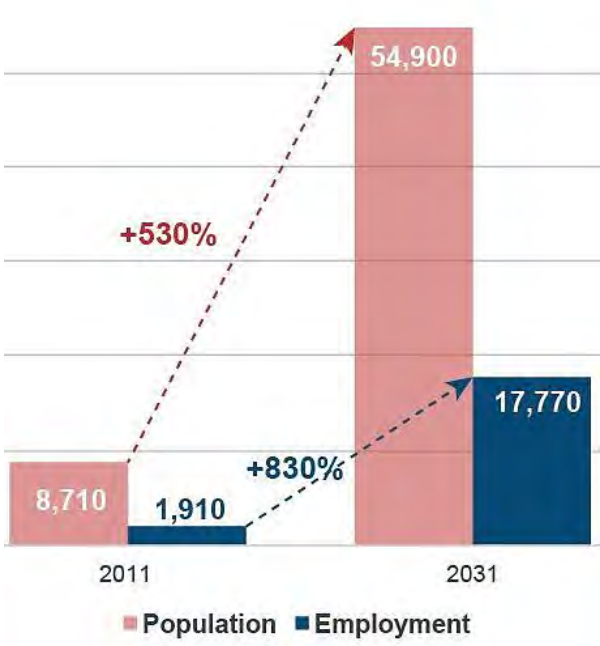


Existing AM Peak Hour V/C Ratios

Planned Growth

The Study Area is expected to grow by approximately **46,200 people** and **15,900 jobs** between 2011 and 2031



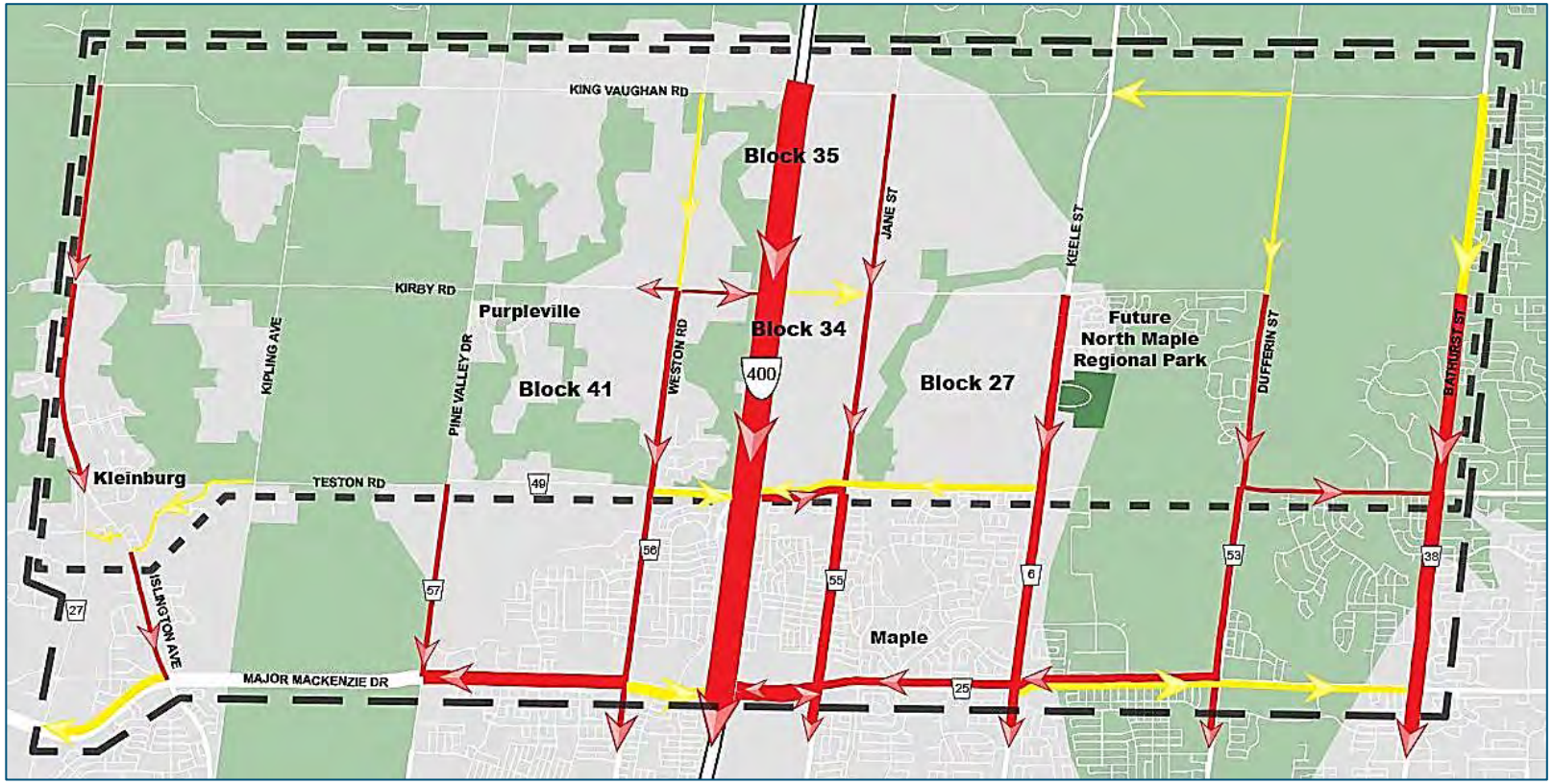


LEGEND

- Primary Study Area
- Secondary Study Area
- Population Growth (2011 - 2031)
  - Population > 25,000
  - Population ≤ 5,000
- Employment Growth (2011 - 2031)
  - Employment > 7,500
  - Employment ≤ 500

2031 Do Nothing Screenline Analysis AM Peak Hour– V/C Ratios

- Delay for all southbound arterials and the Highway 400 will increase by 1.25x
- Includes current construction projects



Problem and Opportunity

There is a need for **capacity** and **operational improvements** for all travel modes

In today's network, there are several **gaps** in the road network, **limited** active transportation facilities, and **limited** transit service.

Without any improvements to the transportation network in the Study Area, **there will be increased travel delays** for all road users.

North Vaughan and New Communities areas are expected to grow by approximately **46,190 people** and **15,860 jobs** by 2031.

Opportunities exist to provide **improved connectivity** by **bridging gaps**, **eliminating jogs**, and **expanding transit service**.

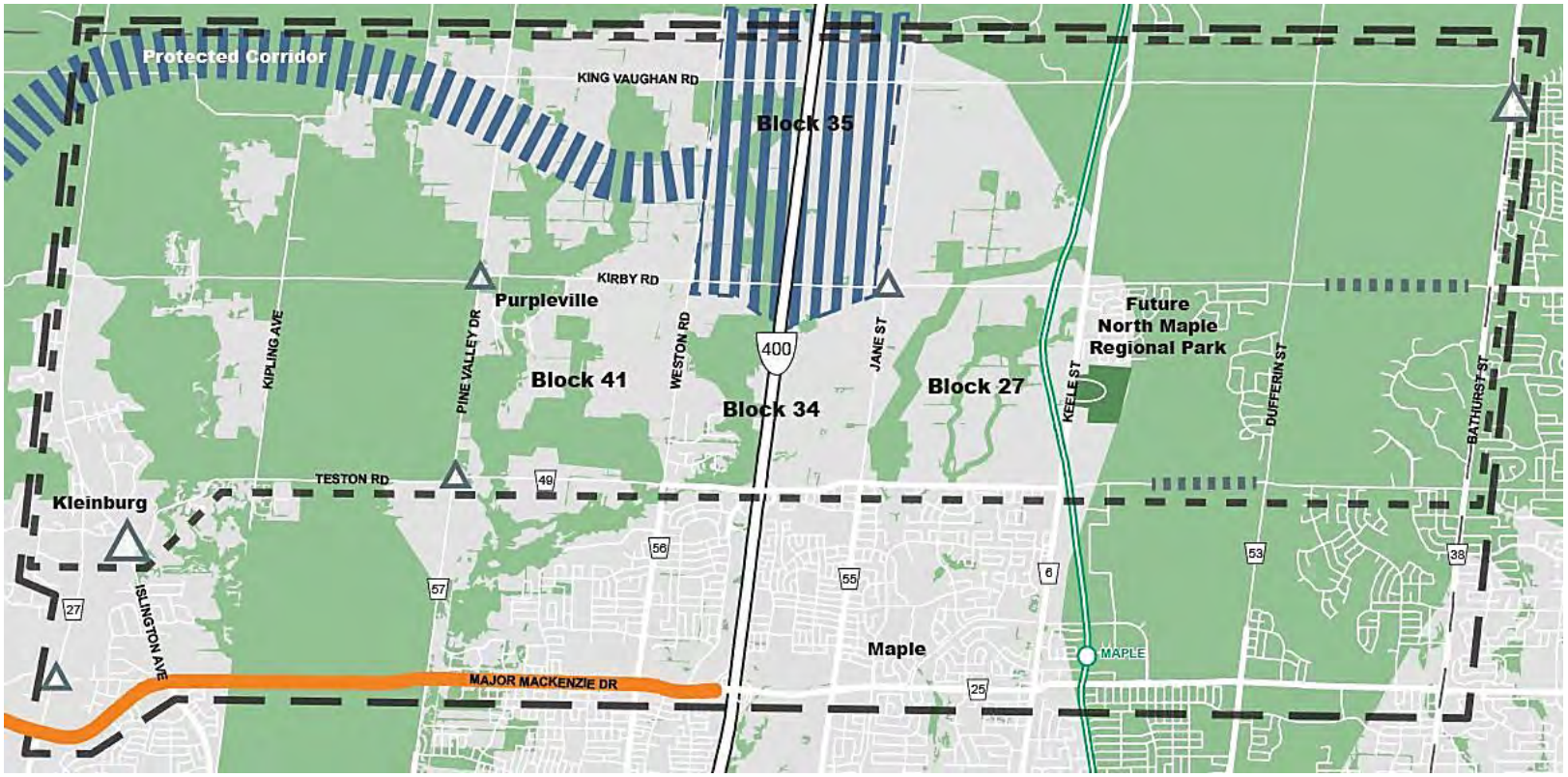
The existing pedestrian, cycling, and road networks can be **improved** and **better integrated** into the overall transportation network.

Network Alternatives

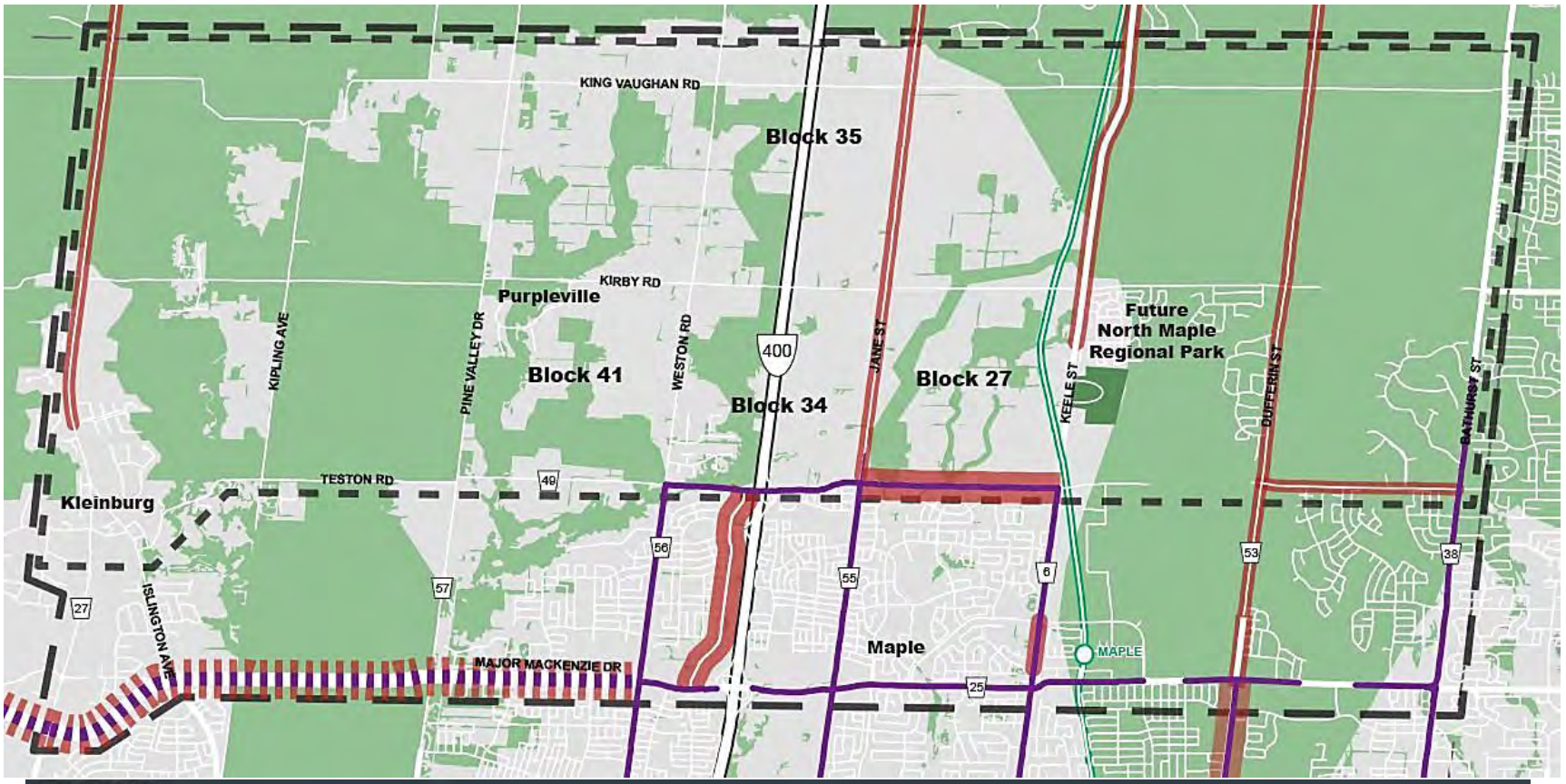
Alternative 1

2031 Network Alternative #1 – Do Nothing

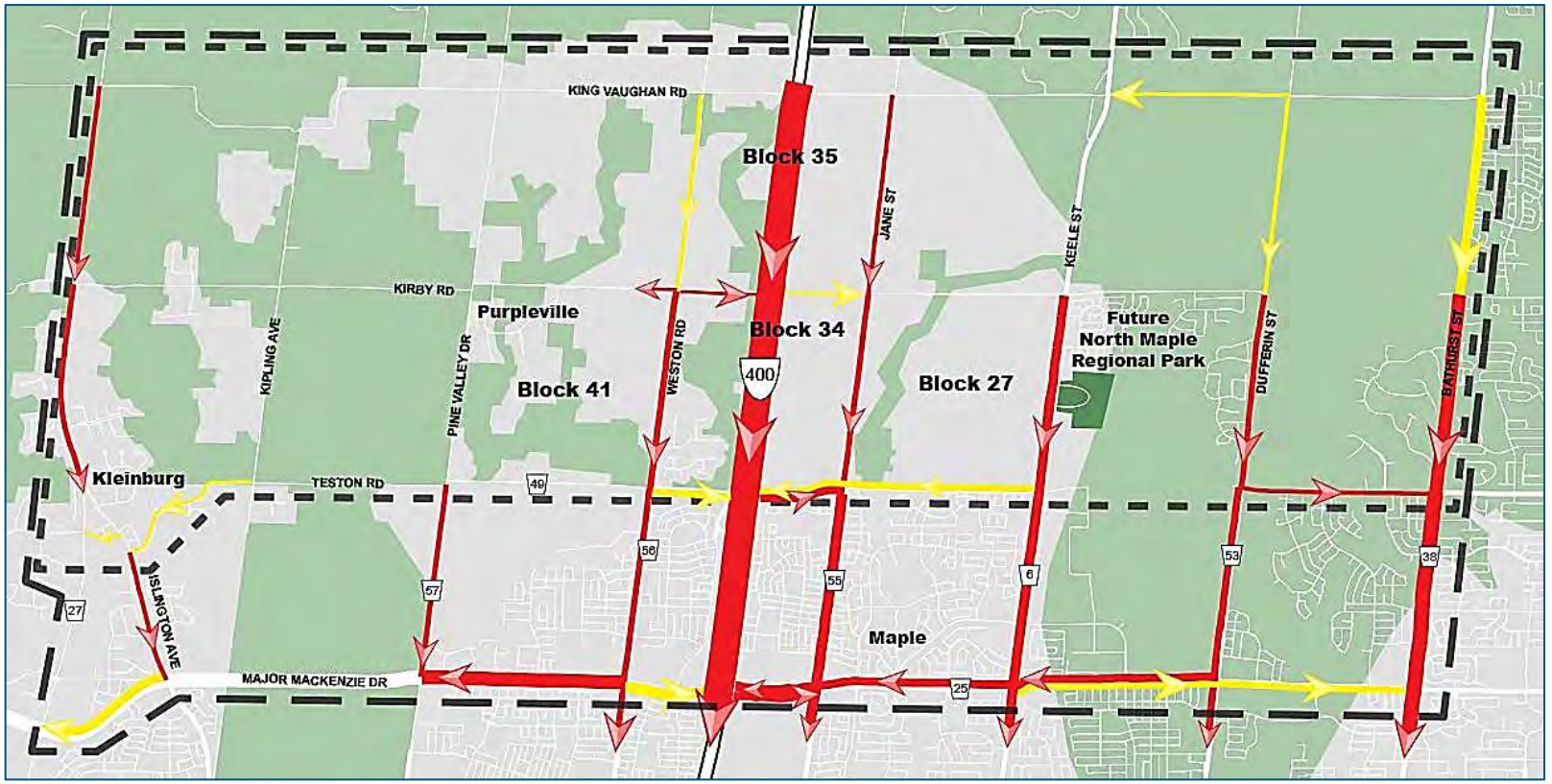
Alternative 1 = Today's Network + Under Construction Improvements + Future Growth to 2031

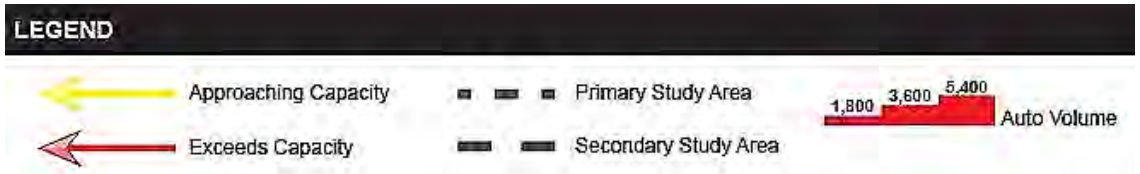


2031 Network Alternative #1 – Do Nothing Active Transportation



2031 Network Alternative #1 – V/C Ratios

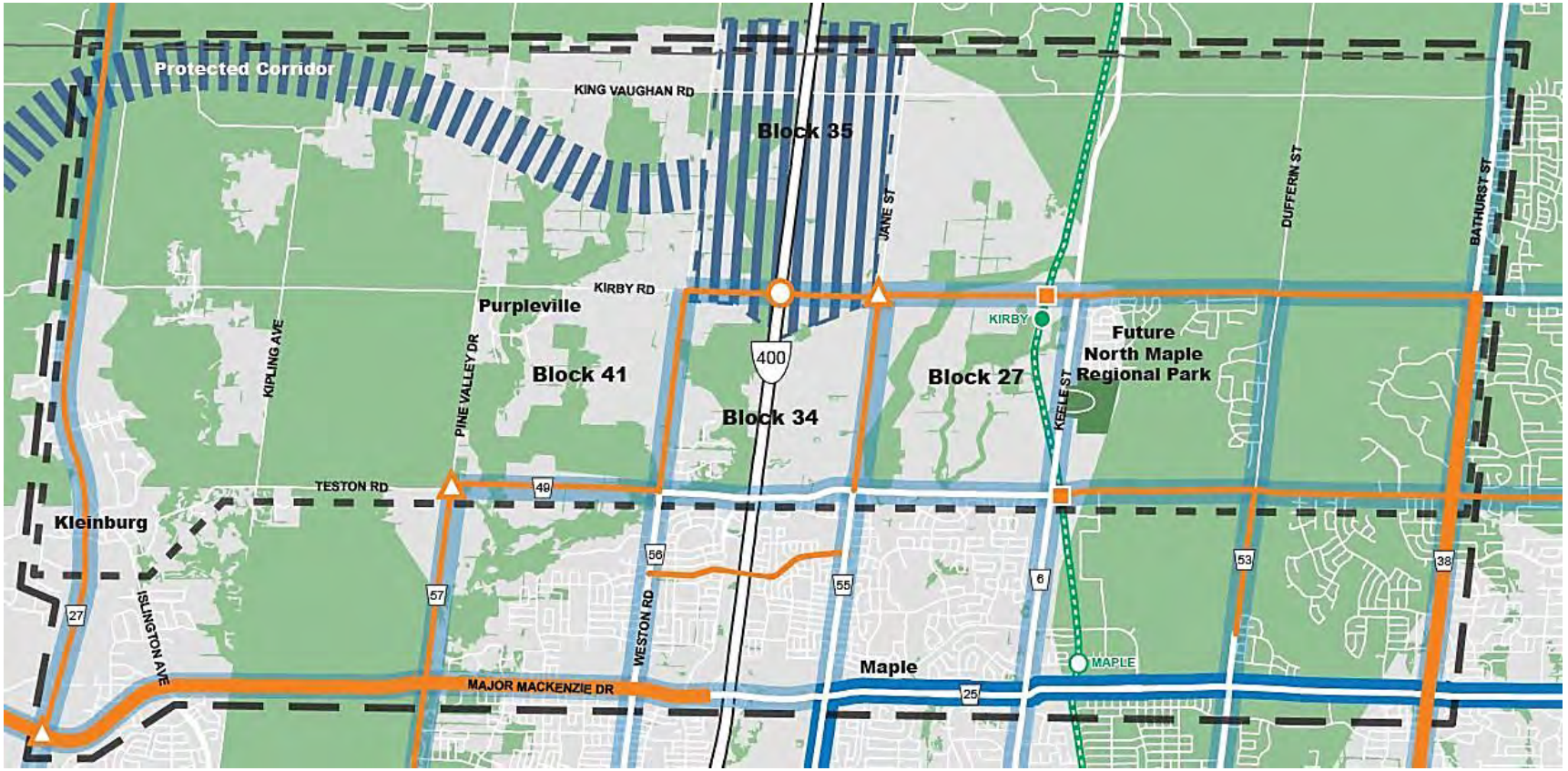




- Study Area experiences significant southbound congestion

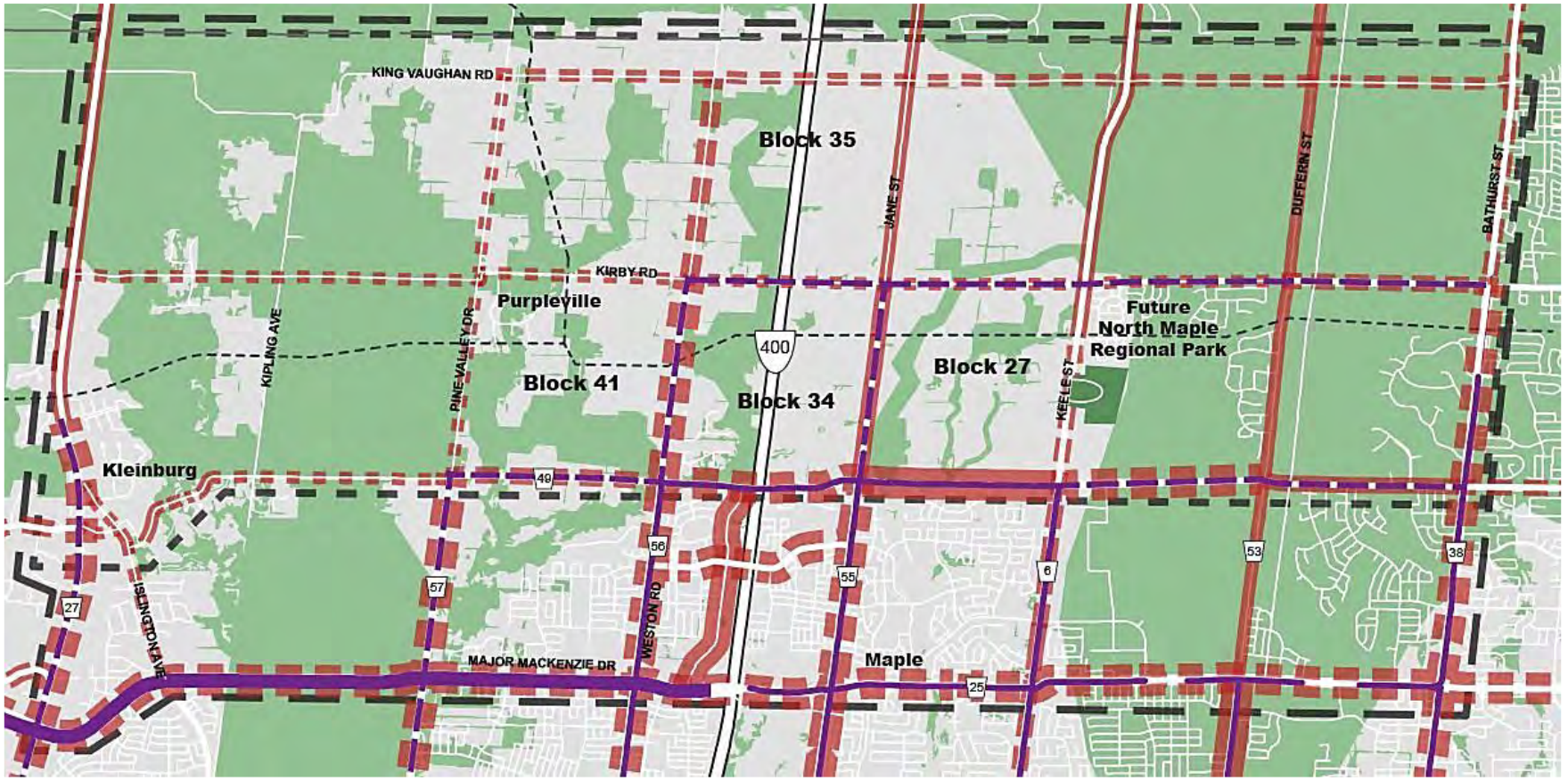
Alternative 2

2031 Network Alternative #2 – Proposed Regional Improvements

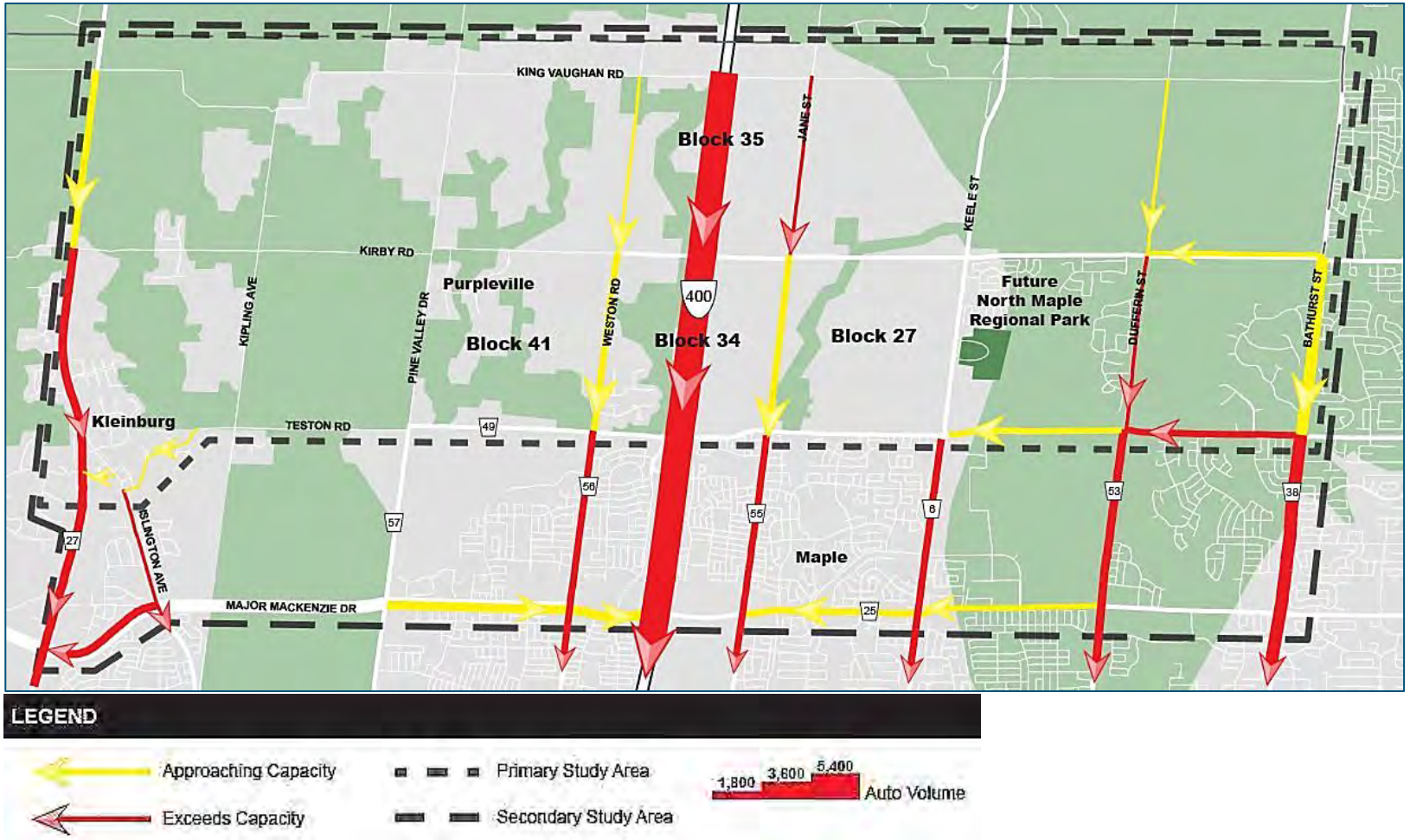


Note: Kirby Road currently under City jurisdiction

2031 Network Alternative #2 – Region Active Transportation Network



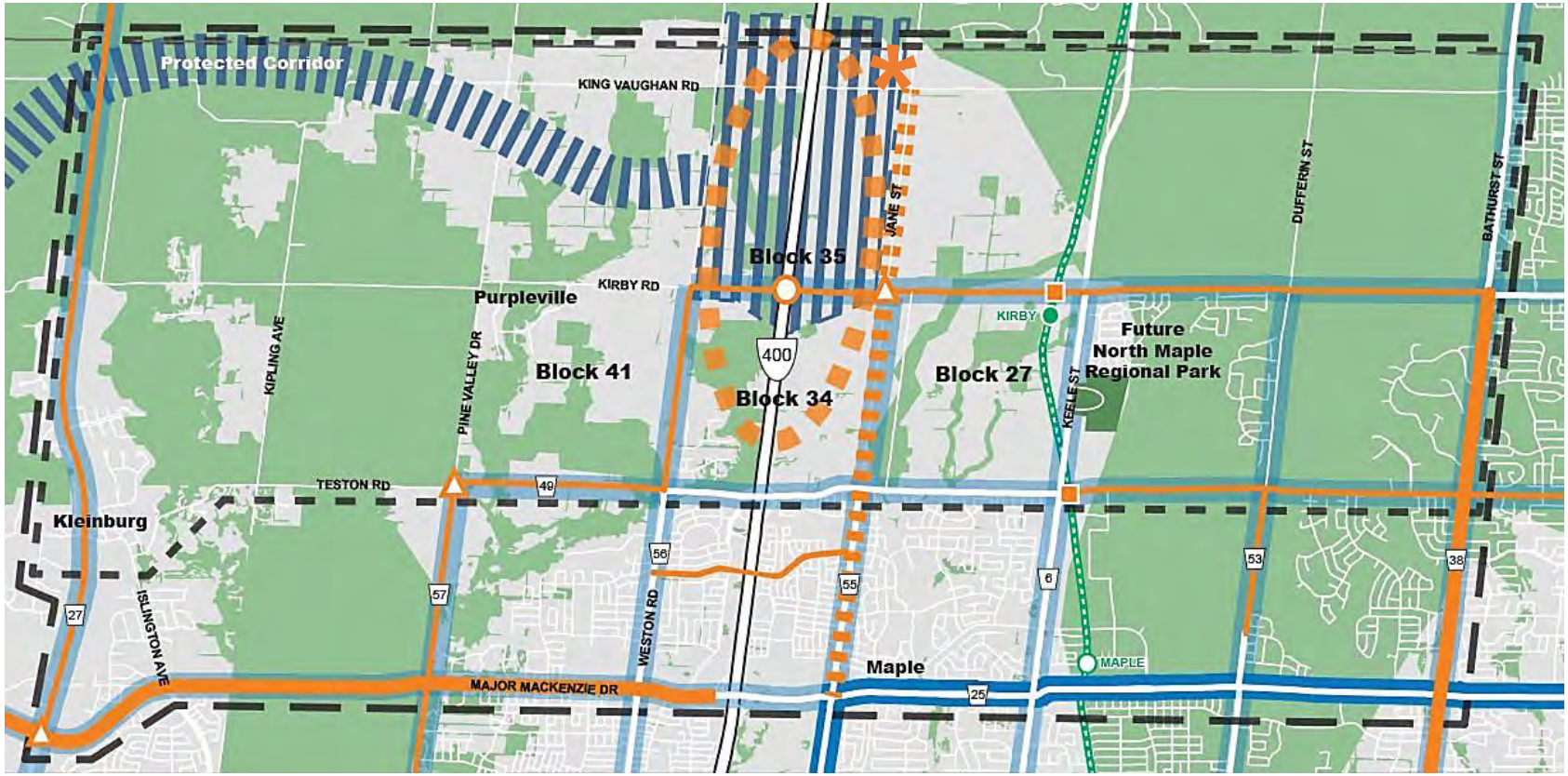
2031 Network Alternative #2 – V/C Ratios



- Study Area experiences significant congestion, south of Teston Road

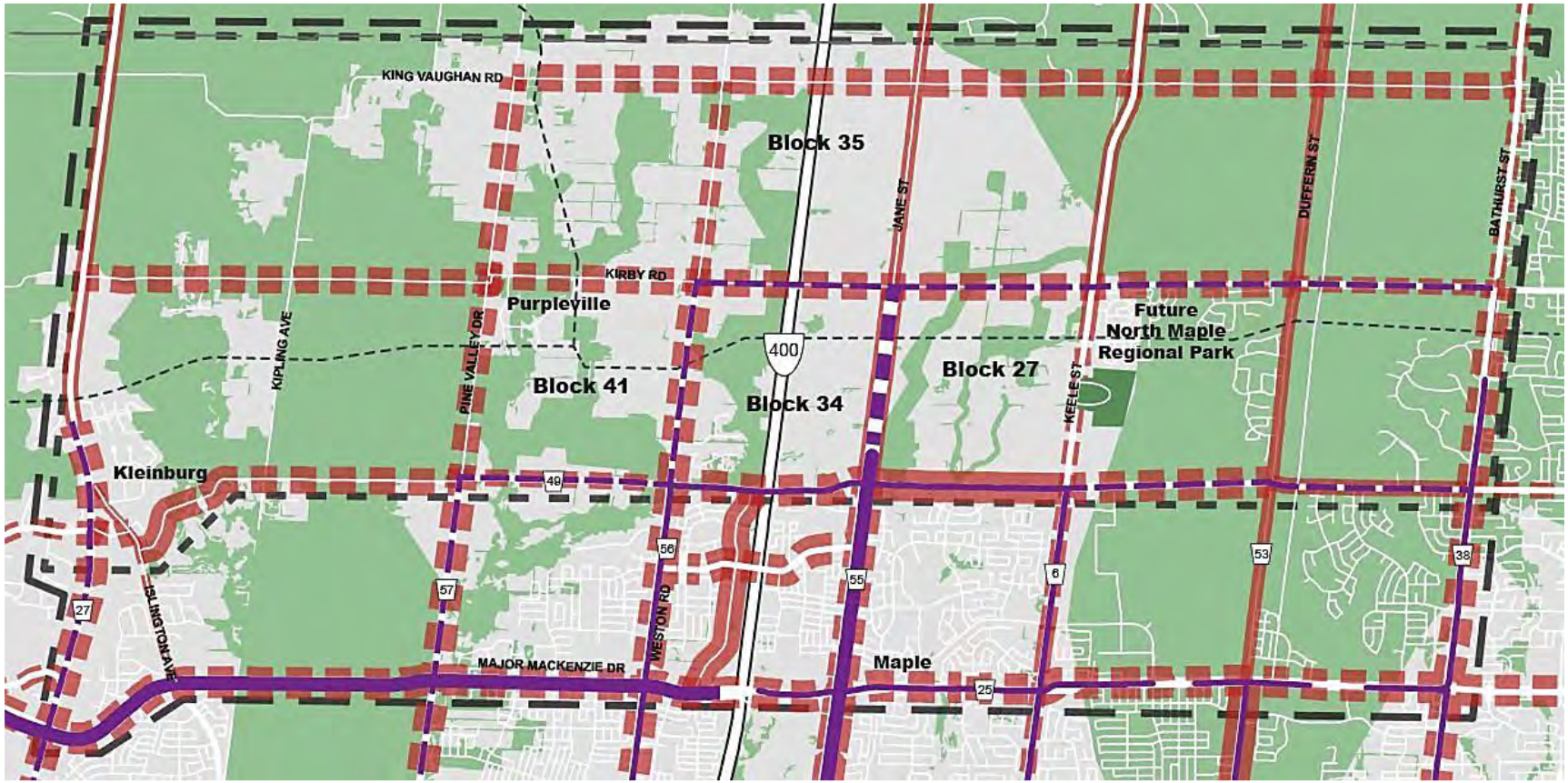
Alternative 3

2031 Network Alternative #3 – Enhanced Network

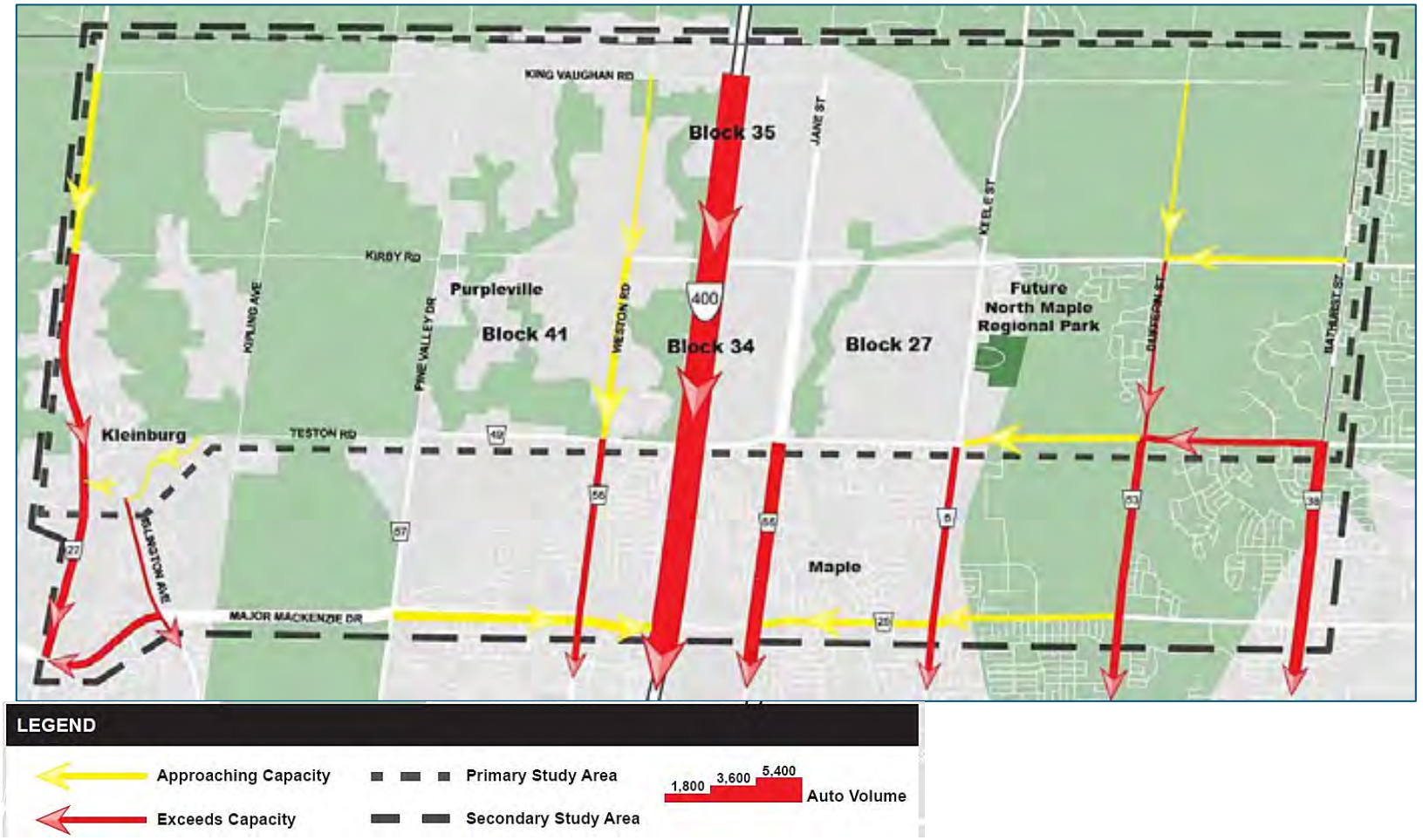


* Minimum of one mid-block crossing between Teston Road and King-Vaughan Road is recommended Subject to further EA study and completion of the GTA West Corridor EA Study

2031 Network Alternative #3 – Enhanced Active Transportation Network



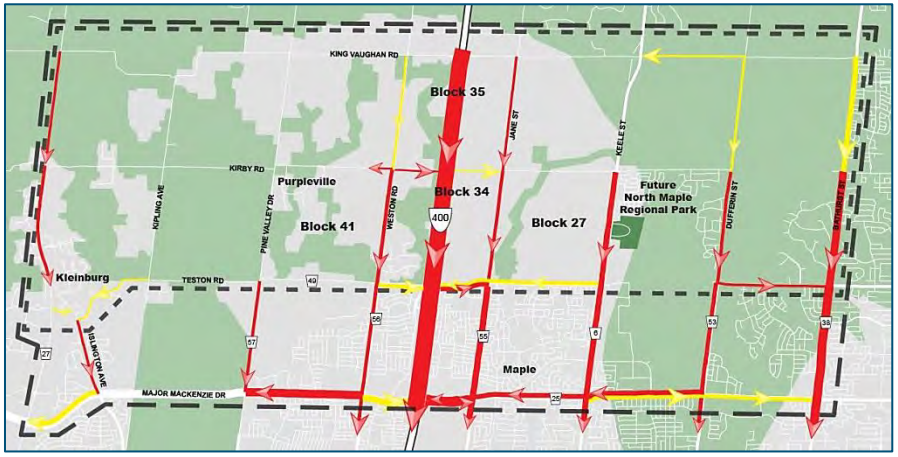
2031 Network Alternative #3 – V/C Ratios



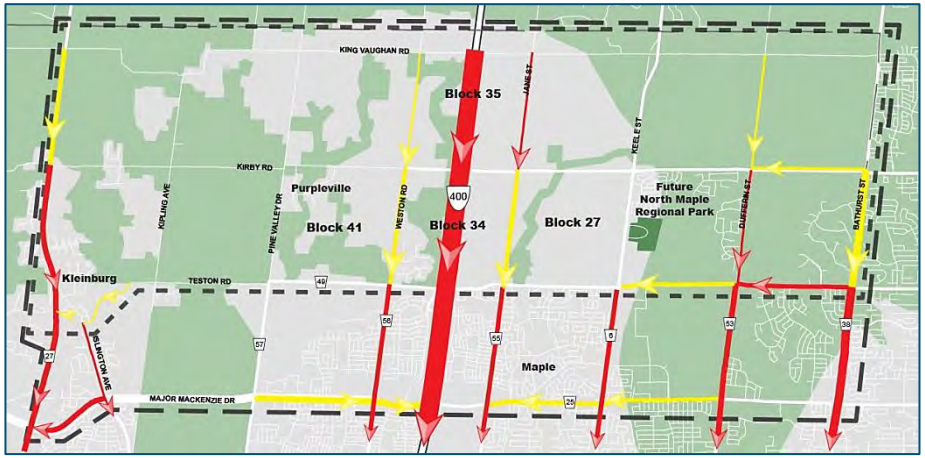
- With the recommended network enhancements, congestion has lessened in the Study Area

2031 Network Alternatives Comparison – AM Peak Hour

Existing



Alternative 1 – Do Nothing



Alternative 2 – Region Recommendations

Alternative 3 – Enhanced Network

Evaluation of Alternatives

Evaluation of Alternatives - Criteria

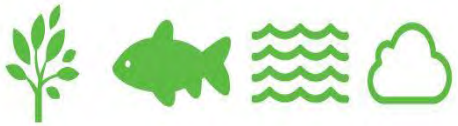
Main alternatives were analyzed based on four major criteria:

Transportation

- Pedestrian and bicycle connectivity
- Ensures efficient movement of people and goods
- Promotes accessibility for all travel modes to all land uses and for users of all ages and abilities
- Promotes reliable and convenient transit

Natural Environment

- Impacts on natural vegetation, wildlife, and aquatic habitats
- Impacts on surface water and groundwater
- Impacts on air quality from vehicle exhaust emissions
- Mitigate climate change impacts



Socio-Economic Environment

- Support growth of the new community areas by maximizing accessibility and minimizing congestion
- Minimizes impacts on existing neighbourhoods

Cost and Feasibility

- Minimizes construction costs
- Minimizes cost of maintenance and operations
- Construction staging and feasibility

Evaluation of Alternatives

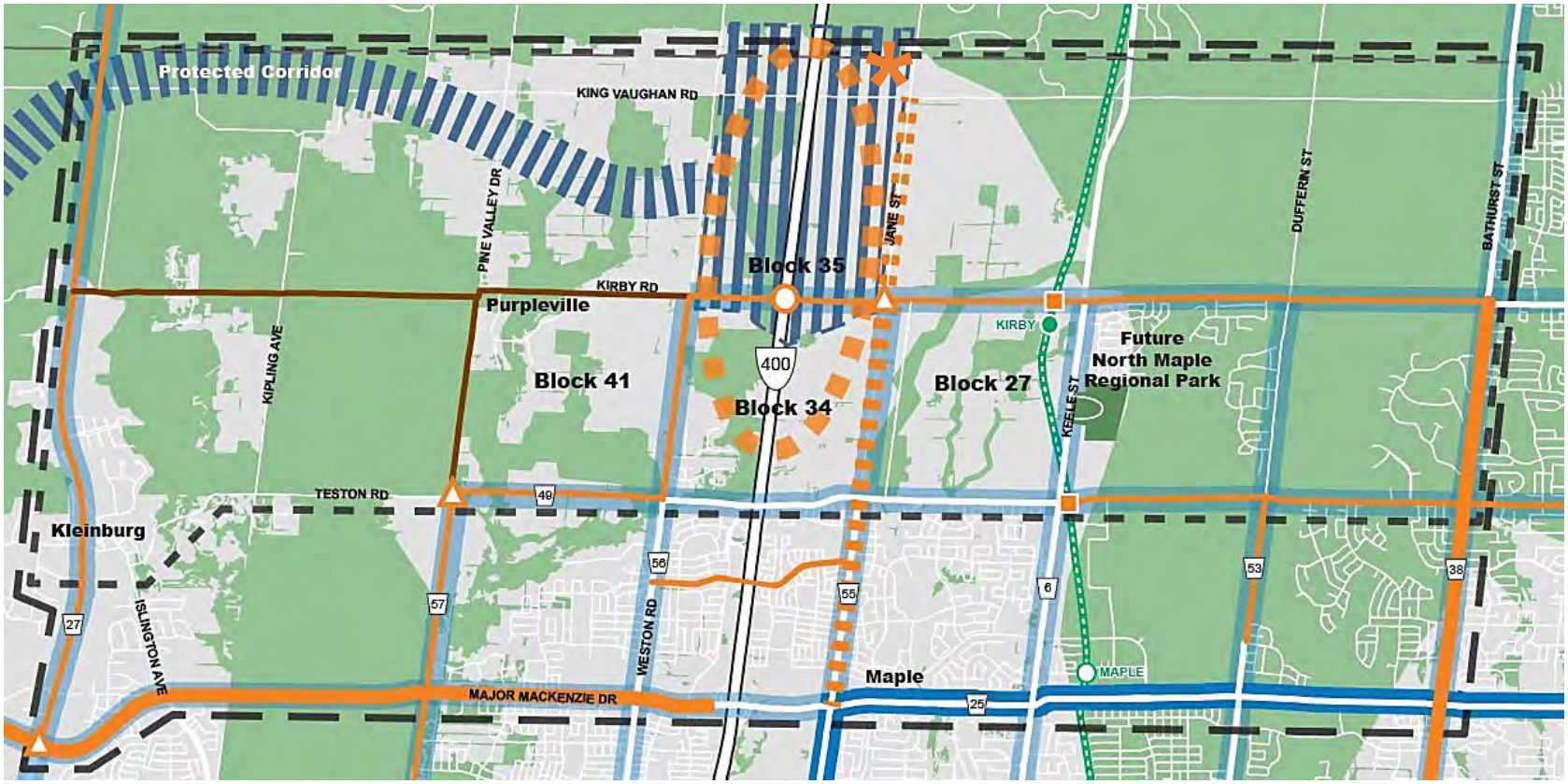
Alternative 3 is the preferred network for the Study Area.

Criteria	Alternative 1 Do Nothing	Alternative 2 Region Plans	Alternative 3 Enhanced Network
Transportation	○	◔	●
Natural Environment	●	◑	○
Socio-Economic Environment	○	◔	●
Cost and Feasibility	○	●	◑
Overall Rating	○	◑	●

● **Most Preferred** ○ **Least Preferred**

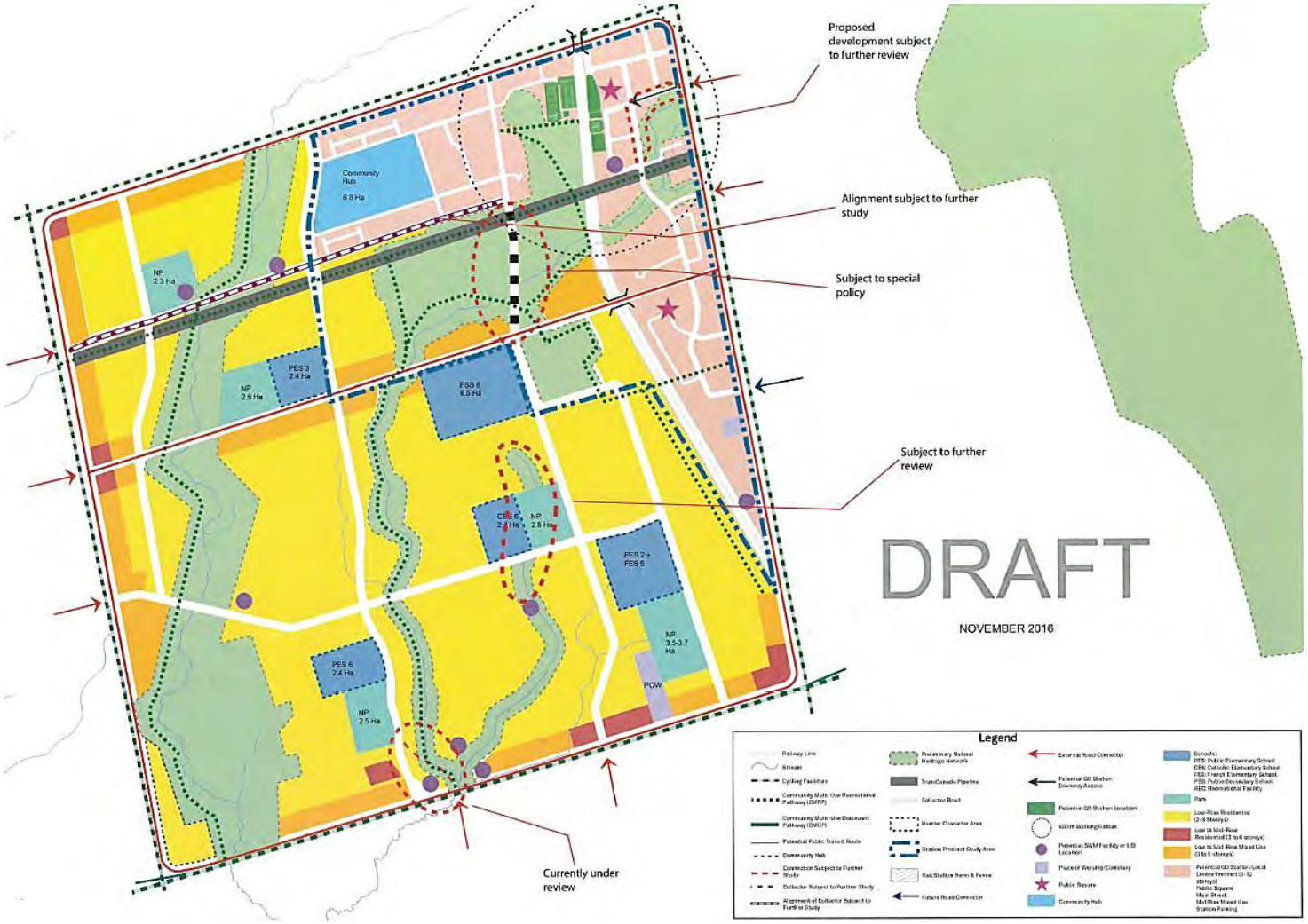
Preferred Network

2031 Network Alternative #3 – Enhanced Network + Additional Improvements



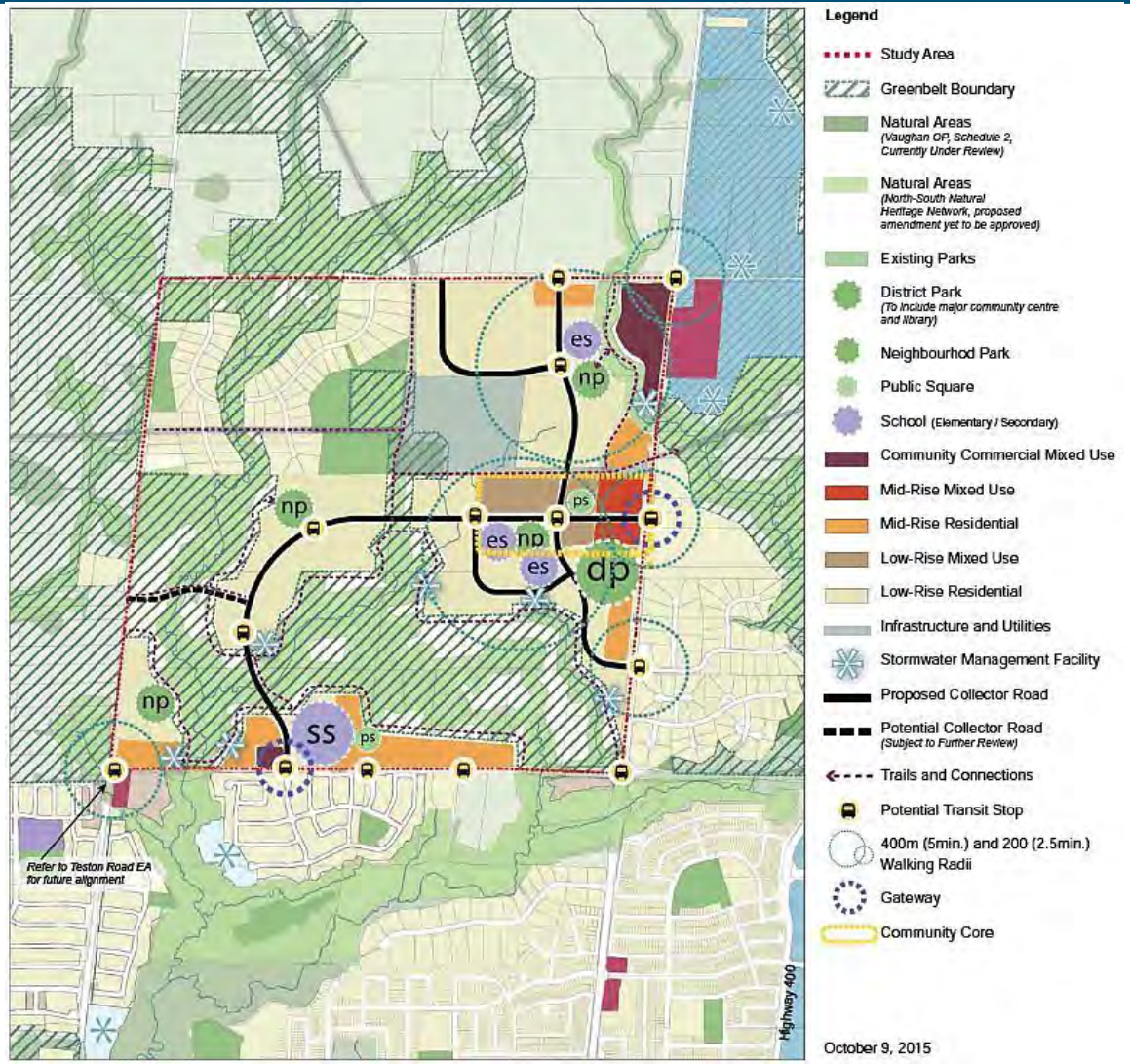
* Minimum of one mid-block crossing between Teston Road and King-Vaughan Road is recommended
Subject to further EA study and completion of the GTA West Corridor EA Study

Block 27



Note: All roads in the Block 27 Plan are 2 lane roads

Block 41


Legend
Study Area
Greenbelt Boundary
Natural Areas
(Vaughan OP, Schedule 2, Currently Under Review)
Natural Areas
(North-South Natural Heritage Network, proposed amendment yet to be approved)
Existing Parks
District Park
(To include major community centre and library)
Neighbourhod Park
Public Square
School (Elementary / Secondary)
Community Commercial Mixed Use
Mid-Rise Mixed Use
Mid-Rise Residential
Low-Rise Mixed Use
Low-Rise Residential
Infrastructure and Utilities
Stormwater Management Facility
Proposed Collector Road
Potential Collector Road
(Subject to Further Review)
Trails and Connections
Potential Transit Stop
400m (5min.) and 200 (2.5min.) Walking Radii
Gateway
Community Core
es
np
ps
dp
ss
Refer to Teston Road EA for future alignment
Highway 400
October 9, 2015

2031 Network Alternative #3 – Enhanced Network Phasing

Phasing tied to development timing and York Region's development plans

- **Road Improvements on** Kirby Road (from Weston Road to Bathurst Street) to coincide with the opening of Kirby GO Station and Regional Express Rail
- **Grade Separation** of Kirby Road and the Barrie GO Line in conjunction with Kirby GO Station
- **Frequent Transit Network** for Kirby Road and intersecting arterials are advanced to coincide with Kirby GO opening
- Road Capacity and Transit Priority Improvements on Jane Street from Major Mackenzie Drive to Kirby Road to improve transit connectivity to Kirby GO Station
- Road widening of Jane Street from Kirby Road to King-Vaughan Road to support Block 35 growth.
- Road improvements on Kirby Road from Highway 27 to Weston Road.
- Road improvements on Pine Valley Drive from Teston Road to north of Kirby Road.

Kirby GO Station

Kirby GO Station

- Metrolinx has identified target mode shares for all travel modes

12 – 14%
Walking

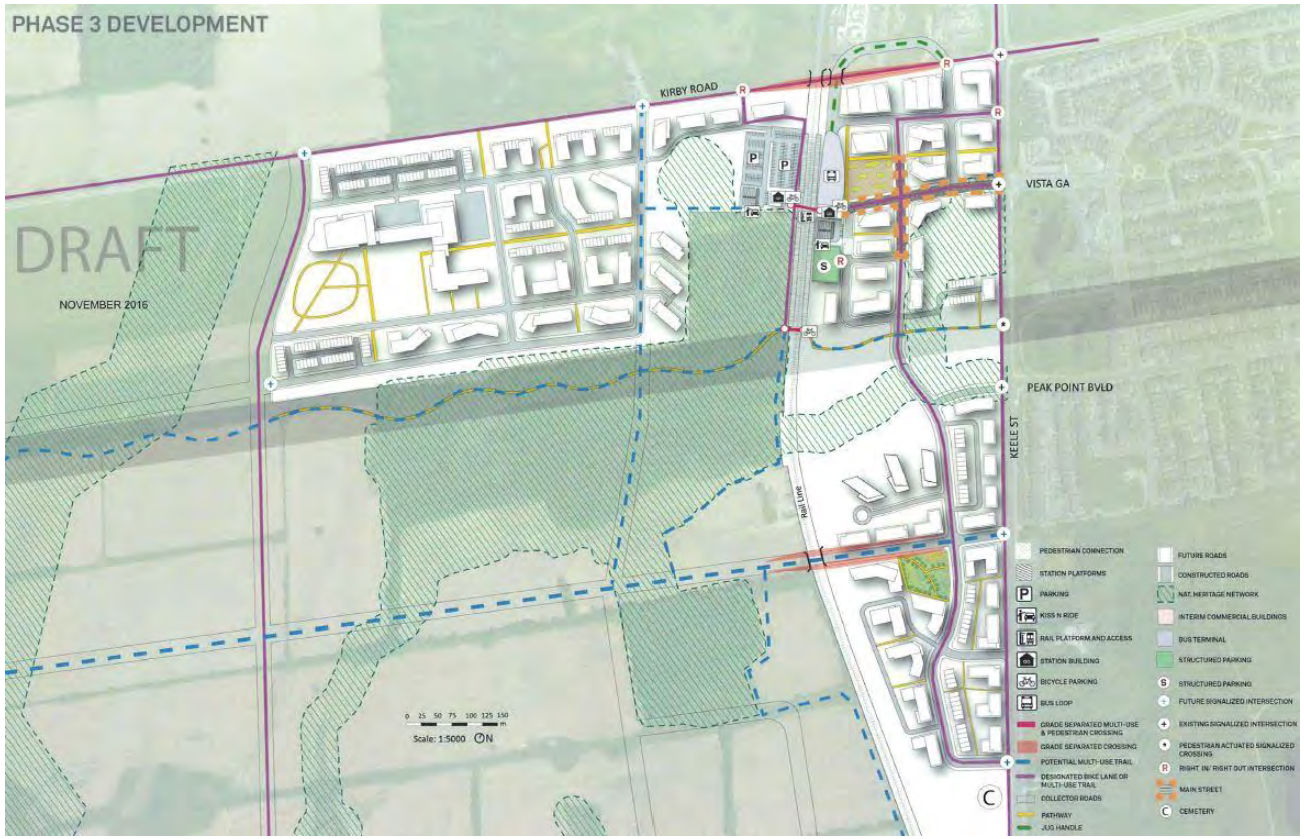
3 – 4%
Cycling

26 – 28%
Pick Up / Drop Off

40 – 42%
Drive and Park

18 – 20%
Transit

5 – 6%
Carpool

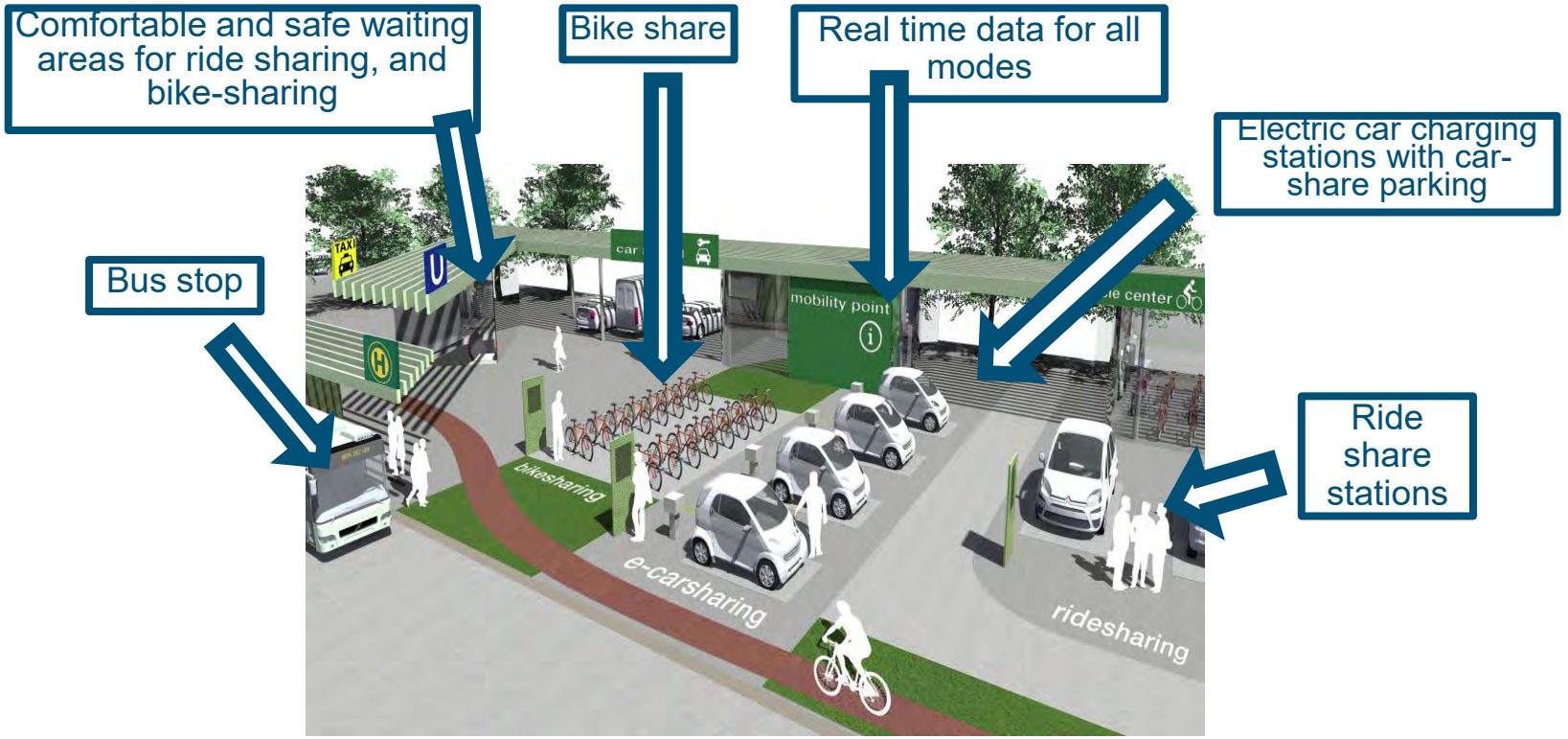


Micro Transit

- A flexible and on-demand transit service that is independent from the transit network
- Can be used to help supplement transit service

Innovative Mobility Opportunity at Kirby GO

- Leverage emerging technologies to improve transportation efficiency through the concept of the *EcoMobility hub**
- *EcoMobility hub** connects all modes of travel by providing:



Source: multi mobility, Sophia von Berg, 2014

*Source:

1. Karim D. M., Innovative Mobility Master Plan: Connecting Multimodal Systems with Smart Technologies, Disrupting Mobility Conference, MIT Media Lab, Cambridge, USA, November 11~13, 2015.
2. Karim D. M., Creating an Innovative Mobility Ecosystem for Urban Planning Areas, Disrupting Mobility - Impacts of Sharing Economy and Innovative Transportation on Cities, Springer Book, Lectures in Mobility, ISBN: 978-3-319-51601-1, pages 21-47, 2017.

Next Steps

- PIC #2 – April 5, 2017 (tentative) joint with Kirby GO Transit Hub Sub-study
- Draft Final Report Q3 2017

Questions?

Chai, Jonathan

From: Lai, Winnie <Winnie.Lai@vaughan.ca>
Sent: March-28-17 2:10 PM
To: Chai, Jonathan; Curak, Catherine
Cc: Hubjer, Selma
Subject: FW: MNRF Comments - North Vaughan and New Communities TMP
Attachments: 41 MNRFComments_YorkRegionTMP_September2016.pdf; 28 MNRF Comments_May2016.pdf; MNRFComments_YorkRegionDraftProjectSheets.pdf; MNRFComments_VaughanTMP_FINAL.PDF

Jonathan,

As soon as the PIC is over, we need to draft responses to MNRF's comments as attached.

Regards,

Winnie Lai P.Eng.
Transportation Project Manager/ Engineer
905-832-8585, ext. 8192 | winnie.lai@vaughan.ca

From: Gilchrist, Gabrielle (MNRF) [mailto:Gabrielle.Gilchrist@ontario.ca]
Sent: Friday, March 24, 2017 3:21 PM
To: Lai, Winnie
Cc: Strong, Steven (MNRF); Heaton, Mark (MNRF); Andersen, Jeff (MNRF); Funnell, Emily (MNRF)
Subject: MNRF Comments - North Vaughan and New Communities TMP

Hi Winnie,

Please find attached MNRF preliminary comments on the draft North Vaughan and New Communities Transportation Master Plan.

Also attached are letters from MNRF regarding the York Region Transportation Master Plan where some transportation projects, as discussed, are within the North Vaughan study area.

Thank you,

Gabby

Gabrielle Gilchrist
A/Management Biologist | Aurora District | Regional Operations Division | Ministry of Natural Resources and Forestry | 50 Bloomington Rd W. Aurora, ON L4G 0L8 | 905-713-7398 | gabrielle.gilchrist@ontario.ca

Ministry of
Natural Resources
and Forestry
Aurora District Office
50 Bloomington Road
Aurora, Ontario L4G 0L8

Ministère des
Richesses naturelles
et des Forets

Telephone: (905) 713-7400
Facsimile: (905) 713-7361

Ontario

July 16, 2015

Winnie Lai, M.A.Sc., P.Eng.
Transportation Project Manager
Development Engineering & Infrastructure Planning Services
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Phone: 905-832-8585 Ext. 8192

Re: Request for Information for the North Vaughan and New Communities Transportation Master Plan

Dear Ms. Lai,

In your email dated July 8, 2015 you requested information on natural heritage features and element occurrences occurring on or adjacent to the above mentioned location. There are Species at Risk recorded for your study area. . As of the date of this letter, we have records of:

Butternut (END), Redside Dace (END), American Ginseng (END)*, Barn Swallow (THR), Bank Swallow (THR), Bobolink (THR), Eastern Meadowlark (THR), Wood Thrush (SC), Eastern Wood-pewee (SC), Redheaded Woodpecker (SC), Short-eared Owl (SC), Milksnake (SC), and Snapping Turtle (SC).

* Please note due to the extremely high sensitivity associated with American Ginseng records it is recommended that this species be referred to as a “sensitive plant species” and that the species name be excluded from any reports that are available to the public or that will be widely circulated.

Please note the East Humber River, Purpleville Creek and the Don River East Branch are considered occupied habitat for Redside Dace. Additional watercourses and wetlands within the study area may also be considered contributing habitat for Redside Dace.

Natural heritage features recorded in the vicinity of your area include the East Humber River Provincially Significant Wetlands, the King-Vaughan Provincially Significant Wetlands, the Humber River Valley Kleinburg ANSI, the Maple Spur Channel ANSI and the Maple Uplands and Kettles Candidate ANSI.

These species may receive protection under the *Endangered Species Act 2007* and thus, an approval from MNRF may be required if the work you are proposing could cause harm to these species or their habitats. If the Species at Risk in Ontario List is amended, additional species may be listed and protected under the *ESA 2007* or the status and protection levels of currently listed species may change.

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. For these reasons, the MNRF cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Ontario.

This species at risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any

species at risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca.

Sincerely,

Megan Eplett
Management Biologist
Ontario Ministry of Natural Resources and Forestry, Aurora District

Chai, Jonathan

From: Chai, Jonathan
Sent: July-16-15 11:54 AM
To: Winnie.Lai@vaughan.ca
Subject: FW: North Vaughan and New Communities Transportation Master Plan Technical Advisory Committee Meeting
Attachments: CityofVaughan_NVNCTMP_16July15.pdf

FYI

Jonathan Chai, P.Eng.
D 289.695.4629

hdrinc.com/follow-us

From: Eplett, Megan (MNRF) [mailto:Megan.Eplett@ontario.ca]
Sent: July-16-15 11:51 AM
To: Chai, Jonathan
Cc: Burkart, Jackie (MNRF)
Subject: RE: North Vaughan and New Communities Transportation Master Plan Technical Advisory Committee Meeting

Hello Jonathan,

Please find attached a species at risk screening for the study area. As the study area is quite large several species have been included, MNRF will be able to refine species at risk concerns as the project progresses. Please continue to keep MNRF engaged moving forward.

Please forward this email to Winnie Lai at the City of Vaughan.

Thank you,

Megan Eplett

Megan Eplett | Management Biologist | Aurora District | Ministry of Natural Resources and Forestry

☎ (905) 713-7369 | megan.eplett@ontario.ca

From: Burkart, Jackie (MNRF)
Sent: July-08-15 2:41 PM
To: Eplett, Megan (MNRF)
Subject: FW:

From: Chai, Jonathan [mailto:Jonathan.Chai@hdrinc.com]
Sent: July 8, 2015 2:38 PM

To: Burkart, Jackie (MNRF); Lai, Winnie
Subject: RE:

Attached is a map identifying critical issues in the study area.
Key items that we see that may involve you are the potential new connections at Teston Road (Keele to Dufferin) and Kirby Road (Dufferin to Bathurst). The study scope also includes the development of the transportation network in the Block 27 and 41 areas – there are current secondary plan studies for both of these Blocks this study is being performed in parallel with

Jonathan Chai, P.Eng.
D 289.695.4629

hdrinc.com/follow-us

From: Burkart, Jackie (MNRF) [mailto:Jackie.Burkart@ontario.ca]
Sent: July-08-15 2:33 PM
To: Lai, Winnie; Chai, Jonathan
Subject: RE:

Please provide a map of the study area. MNRF will need this ASAP to determine if we need to be involved.

Thanks,

_____
Jackie Burkart
District Planner
Ministry of Natural Resources and Forestry | 50 Bloomington Road, Aurora, ON L4G 0L8 | Phone: 905-713-7368 | Fax: 905-713-7360 | Email: jackie.burkart@ontario.ca |

Subject:
When: August-06-15 2:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Committee Room 244

Good Afternoon:

You are invited to attend the first North Vaughan and New Communities Transportation Master Plan Technical Advisory Committee Meeting. Please advise us of your attendance. If you are unable to attend or would like to send a delegate in your place, please let us know. Should there be other staff in your organization that should be included in our TAC, please let us know.

Agenda to the meeting will follow as it gets closer to the meeting date.

Thursday, August 6, 2015
2:00pm to 4:00pm
City of Vaughan City Hall
Committee Room 244

<< File: ATT21946 1.jpg >>

Technical Advisory Committee Meeting # 1

Regards,

Winnie Lai M.A.Sc., P.Eng.
Transportation Project Manager
Development Engineering & Infrastructure Planning Services
City of Vaughan | 2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Bus: 905-832-8585 Ext. 8192 | Fax: 905-832-6145
www.vaughan.ca
<< File: ATT99403 2.jpg >>

Ministry of
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Richesses naturelles et des Forêts

Telephone: (905) 713-7400
Facsimile: (905) 713-7361

Ontario

Email: Winnie.Lai@vaughan.ca

March 24, 2017

Winnie Lai
City of Vaughan
Transportation Project Manager
Development Engineering & Infrastructure Planning
tel: 905-832-8585 ext. 8192

Dear Ms. Lai,

Re: North Vaughan and New Communities DRAFT Transportation Master Plan
City of Vaughan, Regional Municipality of York

The City of Vaughan (City) is undertaking a Transportation Master Plan (TMP) in order to address the City's mobility needs. The general area of implementation is north-south between King-Vaughan Road and Major MacKenzie Drive, and east-west between Highway 27 and Bathurst Street. The Draft TMP proposes a number of transportation improvements including (but not limited to):

- Two "missing link" road connections which would include opening road allowance of Kirby Road between Dufferin Street and Bathurst Street and Teston Road between Keele Street and Dufferin Street;
- Two new mid-block crossings between Weston Road and Jane Street (i.e., at least one between King-Vaughan Road and Teston Road, and one between Teston Road and Major MacKenzie Drive);
- New interchange at Highway 400;
- A number of significant road widening projects;
- A number of significant road improvements and upgrades (details to be determined);
- A new proposed GO Rail Station (Kirby GO), and;

- A number of improvement to more passive transportation alternatives (e.g., new cycling facilities, sidewalks).

It is understood that the TMP is following the Master Plan process and is intended to fulfil the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment for the recommended projects, which includes identification of the problem or opportunity, and the identification and evaluation of alternative solutions to address these problems or opportunities.

MNRF encourages the City to continue consulting this Ministry on the TMP to ensure up-to-date information is used regarding the natural environment, sensitive features, species at risk and their habitats. MNRF staff will evaluate the need, going forward, for potential authorizations under the *Endangered Species Act, 2007* (ESA).

As a component of the TMP and requirements of Municipal Class EA, the City has held two Technical Advisory Committee (TAC) meetings, presenting existing and future conditions, the problem or opportunity statement, alternatives considered, recommended improvement(s) and justification(s), alignment with TMP objectives, costs, related projects, and constraints.

MNRF attended the first TAC meeting on August 6, 2015, presented natural heritage mapping following the meeting, and provided a species at risk screening on July 16, 2015. Please find below preliminary comments specific to the presentation given at the second TAC meeting on March 10, 2017.

“Missing Link” Road Connections

It is MNRF’s understanding that Teston and Kirby Road “missing links” will be going through separate EAs. As such, the TMP should recognize, at this point, no determinations have been made with respect to the extensions of these roads. It is unclear how alternatives can be appropriately assessed given the outcomes of these separate EAs are yet to be determined.

As requested by MNRF at the TAC meeting of March 10, 2017, a fourth network alternative presenting traffic levels without the Kirby Road and Teston Road “missing links” road connections was developed. On March 20, 2017, MNRF received a copy of this fourth alternative along with the relative criterion weighting. MNRF staff are of the opinion, with the elimination of the extension of Teston and Kirby Roads, the impacts to natural heritage features is greatly reduced. The scoring criterion for natural environmental does not necessarily reflect this in evaluation of the fourth alternative. MNRF recommends the relative weighting for natural environment be revised.

Alternatives / Criterion Weighting

The natural environment criterion contains a number of sub-components that are somewhat unrelated. Although MNRF staff are pleased to see climate change being considered in a TMP, we recommend that climate change rationale be considered in a separate category from natural heritage and surface and ground water. Because electric vehicle charging stations are proposed at EcoMobility Hub locations, transportation may be a better location for this criterion.

The preferred alternative has potential to have significant impacts to natural heritage features and systems within the study area. At the March 10, 2017 TAC meeting, MNRF expressed concern with the criterion weighting as presented. A number of alternatives will require the creation of new transportation routes in highly sensitive features including sensitive valleylands, woodlands, wetlands and potentially habitat for species at risk. It should be noted that a number of these improvements are located within areas governed by the Oak Ridges Moraine Conservation Plan (ORMCP). Policies of the ORMCP place heightened protection on areas within the Natural Core designation. It does not appear that this policy direction is reflected in the weighting of selection criterion. MNRF provides more detail on the policies of the ORMCP later in this letter.

Species at Risk

Many projects proposed in this TMP may lead to adverse effects to species or habitat protected under the ESA. Where a proposed activity will result in a contravention of subsection 9(1) or 10(1) of the ESA, the proponent of the activity will require an authorization prior to proceeding with the activity. In order to be considered for an ESA authorization, the proponent must agree to conditions set by MNRF, demonstrate project alternatives, and demonstrate the avoidance of potential impact to species at risk and their habitats. The conceptual phase of this TMP is an appropriate time to discuss avoidance and alternatives. The alternative chosen by the City will have the greatest impact to natural heritage feature, and therein, minimization of harm and destruction has not been demonstrated. Pursuant to the ESA, the Minister has the sole discretion on whether an overall benefit permit is issued. An overall benefit permit can only be issued where it is the opinion of the Minister that the legislated requirements under clause 17(2)(c) of the ESA are likely to be met through requirements imposed by the conditions of the permit.

By way of letters dated May 5, 2016, June 16, 2016, and September 19, 2016, MNRF staff provided comments on the Regional Municipality of York's Transportation Master Plan where some projects listed in this study area are categorized in varying levels of risk of impact to natural resources. A copy of these letters has been appended for your

review and consideration. In an effort to streamline review of the many proposed projects within the TMP, MNRF requests a similar list of enumerated proposed projects for the North Vaughan and New Communities TMP to allow for an appropriate evaluation of impacts to natural heritage features and potential authorizations pursuant to the ESA.

Natural Heritage Inventory

MNRF encourages the City to ensure the most current natural heritage information is used throughout the TMP process. Provincial information can be accessed through Land Information Ontario or through NHIC's Make-a-Map as well as through the Aurora District Office. MNRF is pleased to assist the City as may be required.

Oak Ridges Moraine Conservation Plan

The Oak Ridges Moraine Conservation Plan (ORMCP) is an ecologically-based plan which provides land use and resource management direction for land and water for those areas within the Moraine. MNRF staff note that the Kirby and Teston Road "missing links" are proposed within the ORMCP Natural Core Area designations. Please note the following excerpt from Section 41 of the ORMCP dealing with transportation, infrastructure and utilities:

> ***(2)*** *An application for a transportation, infrastructure or utilities use with respect to land in a Natural Linkage Area shall not be approved unless,*
>
> > ***(a)*** *the need for the project has been demonstrated and there is no reasonable alternative; and*
> >
> > ***(b)*** *the applicant demonstrates that the following requirements will be satisfied, to the extent that is possible while also meeting all applicable safety standards:*
> >
> > 1. *The area of construction disturbance will be kept to a minimum.*
> > 2. *Right of way widths will be kept to the minimum that is consistent with meeting other objectives such as stormwater management and with locating as many transportation, infrastructure, and utility uses within a single corridor as possible.*
> > 3. *The project will allow for wildlife movement.*
> > 4. *Lighting will be focused downwards and away from Natural Core Areas.*
> > 5. *The planning, design and construction practices adopted will keep any adverse effects on the ecological integrity of the Plan Area to a minimum.*
>
> ***(3)*** *An application for a transportation, infrastructure or utilities use with respect to land in a Natural Core Area shall not be approved unless the applicant demonstrates that,*
>
> > ***(a)*** *the requirements of subsection (2) have been met;*

(b) *the project does not include and will not in the future require a highway interchange or a transit or railway station in a Natural Core Area; and*
(c) *the project is located as close to the edge of the Natural Core Area as possible.*

(4) *Except as permitted in subsection (5), with respect to land in a key natural heritage feature or a hydrologically sensitive feature, all new transportation, infrastructure and utilities uses and all upgrading or extension of existing transportation, infrastructure and utilities uses, including the opening of a road within an unopened road allowance, are prohibited.*

(5) *Transportation, infrastructure, and utilities uses may be permitted to cross a key natural heritage feature or a hydrologically sensitive feature if the applicant demonstrates that,*

(a) *the need for the project has been demonstrated and there is no reasonable alternative;*
(b) *the planning, design and construction practices adopted will keep any adverse effects on the ecological integrity of the Plan Area to a minimum;*
(c) *the design practices adopted will maintain, and where possible improve or restore, key ecological and recreational linkages, including the trail system referred to in section 39;*
(d) *the landscape design will be adapted to the circumstances of the site and use native plant species as much as possible, especially along rights of way; and*
(e) *the long-term landscape management approaches adopted will maintain, and where possible improve or restore, the health, diversity, size and connectivity of the key natural heritage feature or hydrologically sensitive feature.*

MNRF notes that the preferred alternative is identified as having the greatest impact on natural heritage features of any of the alternatives presented. The TMP should assess the policy requirements as set out in the ORMCP against the proposed alternatives. It should also be noted the infrastructure policies in the ORMCP address both siting/route selection as well as construction design considerations.

Greenbelt Plan

Similar to the ORMCP, the Greenbelt Plan has a number of policies that pertain to the development or expansion of infrastructure. Section 4.2.1 of the Greenbelt Plan provides the following direction with respect to the development or improvement of infrastructure.

4.2.1 General Infrastructure Policies

For lands falling within the Protected Countryside, the following policies shall apply:

1.*All existing, expanded or new infrastructure subject to and approved under the Canadian Environmental Assessment Act , the Environmental Assessment Act, the Planning Act , the Aggregate Resources Act , the Telecommunications Act or by the National or Ontario Energy Boards, or which receives a similar environmental approval, is permitted within the Protected Countryside, subject to the policies of this section and provided it meets one of the following two objectives:*

a.*It supports agriculture, recreation and tourism, rural settlement areas, resource use or the rural economic activity that exists and is permitted within the Greenbelt; or*

b.*It serves the significant growth and economic development expected in southern Ontario beyond the Greenbelt by providing for the appropriate infrastructure connections among urban growth centres and between these centres and Ontario's borders.*

2.*The location and construction of infrastructure and expansions, extensions, operations and maintenance of infrastructure in the Protected Countryside, are subject to the following:*

a.*Planning, design and construction practices shall minimize, wherever possible, the amount of the Greenbelt, and particularly the Natural Heritage System, traversed and/or occupied by such infrastructure ;*

b.*Planning, design and construction practices shall minimize, wherever possible, the negative impacts and disturbance of the existing landscape, including, but not limited to, impacts caused by light intrusion, noise and road salt;*

c.*Where practicable, existing capacity and coordination with different infrastructure services is optimized so that the rural and existing character of the Protected Countryside and the overall urban structure for southern Ontario established by Greenbelt and any provincial growth management initiatives are supported and reinforced;*

d.*New or expanding infrastructure shall avoid key natural heritage features or key hydrologic features unless need has been demonstrated and it has been established that there is no reasonable alternative; and*

e.*Where infrastructure does cross the Natural Heritage System or intrude into or result in the loss of a key natural heritage feature or key hydrologic feature , including related landform features , planning, design and construction practices shall minimize negative impacts and disturbance on the features or their related functions, and where reasonable, maintain or improve connectivity .*

3.*Infrastructure serving the agricultural sector, such as agricultural irrigation systems, may need certain elements to be located within the vegetation*

protection zone of a key natural heritage feature or key hydrologic feature . In such instances, these elements of the infrastructure may be established within the feature itself or its associated vegetation protection zone but all reasonable efforts shall be made to keep such infrastructure out of key natural heritage features or key hydrologic features or the vegetation protection zones.

As with ORMCP, the TMP should assess the policy requirements set out in the Greenbelt against the proposed alternatives.

Thank you for the opportunity to comment on the North Vaughan and New Communities TMP. If you have any questions, do not hesitate to contact me directly at gabrielle.gilchrist@ontario.ca

Sincerely,

Gabrielle Gilchrist

Acting Management Biologist
Ontario Ministry of Natural Resources and Forestry | Aurora District

CC: Emily Funnell, MNRF
Steve Strong, MNRF
Mark Heaton, MNRF
Jeff Andersen, MNRF

Chai, Jonathan

From: O'Leary, Emilee (MOECC) <Emilee.OLeary@ontario.ca>
Sent: May-19-17 4:50 PM
To: winnie.lai.vaughan.ca; Chai, Jonathan
Cc: HDR20160930095533468
Subject: North Vaughan and New Communities Transportation Master Plan
Attachments: A Proponent's Introduction to the Delegation of Procedural Aspects of Consultation with Aboriginal Communities.pdf

Dear Winnie Lai,

I have recently become aware of the City of Vaughan's North Vaughan and New Communities Transportation Master Plan study (http://www.nvnctmp.ca/). I note from the website that this project commenced back in July of 2015 and has since had two Public Information centres. The MOECC's Central Region Office is not in receipt of any of the notices for this study. It is mandatory requirement of the MEA Class EA process that all notices are sent to the Environmental Assessment Coordinator at the appropriate MOECC Regional Office. For projects located in Vaughan, this contact is myself at MOECC's Central Region Office. Accordingly, please ensure that I am added to the stakeholder contact list for this project and that all future correspondence/notices for this project are sent to my attention (via mail and email). Please take note of this mandatory consultation requirement for any other current and future class environmental assessment projects by the City of Vaughan.

A draft copy of the Master Plan should be sent to this office prior to the filing of the final report, allowing a minimum of 30 days for the ministry's technical reviewers to provide comments. Please also forward the Notice of Completion and final Project File/ESR to me when completed.

Additionally, please see information below related to consultation with Indigenous communities.

Thank you,

Emilee O'Leary | Environmental Planner/Environmental Assessment Coordinator
Technical Support Section, Central Region, Ministry of the Environment and Climate Change
5775 Yonge Street, 8th floor, Toronto ON, M2M 4J1
Phone: 416-326-3469 | emilee.oleary@ontario.ca

Consultation with Indigenous communities

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before authorizing this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of this duty to project proponents while retaining oversight of the consultation process.

The proposed project may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to the proposed project**, the MOECC is delegating the procedural aspects of rights-based consultation to the proponent through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Steps that the proponent may need to take in relation to Aboriginal consultation for the proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process" which can be found at the following link: https://www.ontario.ca/document/consultation-ontarios-environmental-assessment-process
Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments

Please also refer to the attached document "A Proponent's Introduction to the Delegation of Procedural Aspects of consultation with Aboriginal Communities" for further information.

The proponent must contact the Director of Environmental Approvals Branch under the following circumstances subsequent to initial discussions with the communities:

- Aboriginal or treaty rights impacts are identified to the proponent by the communities
- The proponent has reason to believe that the proposed project may adversely affect an Aboriginal or treaty right
- Consultation has reached an impasse
- A Part II Order request or elevation request is expected

The Director of the Environmental Approvals Branch can be notified either by email with the subject line "Potential Duty to Consult" to EAASIBgen@ontario.ca or by mail or fax at the address provided below:

Email:	EAASIBGen@ontario.ca Subject: Potential Duty to Consult
Fax:	416-314-8452
Address:	Environmental Approvals Branch 135 St. Clair Avenue West, 1st Floor Toronto, ON, M4V 1P5

The MOECC will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role the proponent will be asked to play in them.

A PROPONENT'S INTRODUCTION TO THE DELEGATION OF PROCEDURAL ASPECTS OF CONSULTATION WITH ABORIGINAL COMMUNITIES

DEFINITIONS

The following definitions are specific to this document and may not apply in other contexts:

Aboriginal communities – the First Nation or Métis communities identified by the Crown for the purpose of consultation.

Consultation – the Crown's legal obligation to consult when the Crown has knowledge of an established or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. This is the type of consultation required pursuant to s. 35 of the *Constitution Act, 1982*. Note that this definition does not include consultation with Aboriginal communities for other reasons, such as regulatory requirements.

Crown – the Ontario Crown, acting through a particular ministry or ministries.

Procedural aspects of consultation – those portions of consultation related to the process of consultation, such as notifying an Aboriginal community about a project, providing information about the potential impacts of a project, responding to concerns raised by an Aboriginal community and proposing changes to the project to avoid negative impacts.

Proponent – the person or entity that wants to undertake a project and requires an Ontario Crown decision or approval for the project.

I. PURPOSE

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that may adversely impact that right. In outlining a framework for the duty to consult, the Supreme Court of Canada has stated that the Crown may delegate procedural aspects of consultation to third parties. This document provides general information about the Ontario Crown's approach to delegation of the procedural aspects of consultation to proponents.

This document is not intended to instruct a proponent about an individual project, and it does not constitute legal advice.

II. WHY IS IT NECESSARY TO CONSULT WITH ABORIGINAL COMMUNITIES?

The objective of the modern law of Aboriginal and treaty rights is the *reconciliation* of Aboriginal peoples and non-Aboriginal peoples and their respective rights, claims and interests. Consultation is an important component of the reconciliation process.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. For example, the Crown's duty to consult is triggered when it considers issuing a permit, authorization or approval for a project which has the potential to adversely impact an Aboriginal right, such as the right to hunt, fish, or trap in a particular area.

The scope of consultation required in particular circumstances ranges across a spectrum depending on both the nature of the asserted or established right and the seriousness of the potential adverse impacts on that right.

Depending on the particular circumstances, the Crown may also need to take steps to accommodate the potentially impacted Aboriginal or treaty right. For example, the Crown may be required to avoid or minimize the potential adverse impacts of the project.

III. THE CROWN'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

The Crown has the responsibility for ensuring that the duty to consult, and accommodate where appropriate, is met. However, the Crown may delegate the procedural aspects of consultation to a proponent.

There are different ways in which the Crown may delegate the procedural aspects of consultation to a proponent, including through a letter, a memorandum of understanding, legislation, regulation, policy and codes of practice.

If the Crown decides to delegate procedural aspects of consultation, the Crown will generally:

- Ensure that the delegation of procedural aspects of consultation and the responsibilities of the proponent are clearly communicated to the proponent;
- Identify which Aboriginal communities must be consulted;
- Provide contact information for the Aboriginal communities;
- Revise, as necessary, the list of Aboriginal communities to be consulted as new information becomes available and is assessed by the Crown;
- Assess the scope of consultation owed to the Aboriginal communities;

- Maintain appropriate oversight of the actions taken by the proponent in fulfilling the procedural aspects of consultation;
- Assess the adequacy of consultation that is undertaken and any accommodation that may be required;
- Provide a contact within any responsible ministry in case issues arise that require direction from the Crown; and
- Participate in the consultation process as necessary and as determined by the Crown.

IV. THE PROPONENT'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

Where aspects of the consultation process have been delegated to a proponent, the Crown, in meeting its duty to consult, will rely on the proponent's consultation activities and documentation of those activities. The consultation process informs the Crown's decision of whether or not to approve a proposed project or activity.

A proponent's role and responsibilities will vary depending on a variety of factors including the extent of consultation required in the circumstance and the procedural aspects of consultation the Crown has delegated to it. Proponents are often in a better position than the Crown to discuss a project and its potential impacts with Aboriginal communities and to determine ways to avoid or minimize the adverse impacts of a project.

A proponent can raise issues or questions with the Crown at any time during the consultation process. If issues or concerns arise during the consultation that cannot be addressed by the proponent, the proponent should contact the Crown.

a) What might a proponent be required to do in carrying out the procedural aspects of consultation?

Where the Crown delegates procedural aspects of consultation, it is often the proponent's responsibility to provide notice of the proposed project to the identified Aboriginal communities. The notice should indicate that the Crown has delegated the procedural aspects of consultation to the proponent and should include the following information:

- a description of the proposed project or activity;
- mapping;
- proposed timelines;
- details regarding anticipated environmental and other impacts;
- details regarding opportunities to comment; and
- any changes to the proposed project that have been made for seasonal conditions or other factors, where relevant.

Proponents should provide enough information and time to allow Aboriginal communities to provide meaningful feedback regarding the potential impacts of the project. Depending on the nature of consultation required for a project, a proponent also may be required to:

- provide the Crown with copies of any consultation plans prepared and an opportunity to review and comment;
- ensure that any necessary follow-up discussions with Aboriginal communities take place in a timely manner, including to confirm receipt of information, share and update information and to address questions or concerns that may arise;
- as appropriate, discuss with Aboriginal communities potential mitigation measures and/or changes to the project in response to concerns raised by Aboriginal communities;
- use language that is accessible and not overly technical, and translate material into Aboriginal languages where requested or appropriate;
- bear the reasonable costs associated with the consultation process such as, but not limited to, meeting hall rental, meal costs, document translation(s), or to address technical & capacity issues;
- provide the Crown with all the details about potential impacts on established or asserted Aboriginal or treaty rights, how these concerns have been considered and addressed by the proponent and the Aboriginal communities and any steps taken to mitigate the potential impacts;
- provide the Crown with complete and accurate documentation from these meetings and communications; and
- notify the Crown immediately if an Aboriginal community not identified by the Crown approaches the proponent seeking consultation opportunities.

b) What documentation and reporting does the Crown need from the proponent?

Proponents should keep records of all communications with the Aboriginal communities involved in the consultation process and any information provided to these Aboriginal communities.

As the Crown is required to assess the adequacy of consultation, it needs documentation to satisfy itself that the proponent has fulfilled the procedural aspects of consultation delegated to it. The documentation required would typically include:

- the date of meetings, the agendas, any materials distributed, those in attendance and copies of any minutes prepared;
- the description of the proposed project that was shared at the meeting;
- any and all concerns or other feedback provided by the communities;
- any information that was shared by a community in relation to its asserted or established Aboriginal or treaty rights and any potential adverse impacts of the proposed activity, approval or disposition on such rights;

- any proposed project changes or mitigation measures that were discussed, and feedback from Aboriginal communities about the proposed changes and measures;
- any commitments made by the proponent in response to any concerns raised, and feedback from Aboriginal communities on those commitments;
- copies of correspondence to or from Aboriginal communities, and any materials distributed electronically or by mail;
- information regarding any financial assistance provided by the proponent to enable participation by Aboriginal communities in the consultation;
- periodic consultation progress reports or copies of meeting notes if requested by the Crown;
- a summary of how the delegated aspects of consultation were carried out and the results; and
- a summary of issues raised by the Aboriginal communities, how the issues were addressed and any outstanding issues.

In certain circumstances, the Crown may share and discuss the proponent's consultation record with an Aboriginal community to ensure that it is an accurate reflection of the consultation process.

c) Will the Crown require a proponent to provide information about its commercial arrangements with Aboriginal communities?

The Crown may require a proponent to share information about aspects of commercial arrangements between the proponent and Aboriginal communities where the arrangements:

- include elements that are directed at mitigating or otherwise addressing impacts of the project;
- include securing an Aboriginal community's support for the project; or
- may potentially affect the obligations of the Crown to the Aboriginal communities.

The proponent should make every reasonable effort to exempt the Crown from confidentiality provisions in commercial arrangements with Aboriginal communities to the extent necessary to allow this information to be shared with the Crown.

The Crown cannot guarantee that information shared with the Crown will remain confidential. Confidential commercial information should not be provided to the Crown as part of the consultation record if it is not relevant to the duty to consult or otherwise required to be submitted to the Crown as part of the regulatory process.

V. WHAT ARE THE ROLES AND RESPONSIBILITIES OF ABORIGINAL COMMUNITIES' IN THE CONSULTATION PROCESS?

Like the Crown, Aboriginal communities are expected to engage in consultation in good faith. This includes:

- responding to the consultation notice;
- engaging in the proposed consultation process;
- providing relevant information;
- clearly articulating the potential impacts of the proposed project on Aboriginal or treaty rights; and
- discussing ways to mitigate any adverse impacts.

Some Aboriginal communities have developed tools, such as consultation protocols, policies or processes that provide guidance on how they would prefer to be consulted. Although not legally binding, proponents are encouraged to respect these community processes where it is reasonable to do so. Please note that there is no obligation for a proponent to pay a fee to an Aboriginal community in order to enter into a consultation process.

To ensure that the Crown is aware of existing community consultation protocols, proponents should contact the relevant Crown ministry when presented with a consultation protocol by an Aboriginal community or anyone purporting to be a representative of an Aboriginal community.

VI. WHAT IF MORE THAN ONE PROVINCIAL CROWN MINISTRY IS INVOLVED IN APPROVING A PROPONENT'S PROJECT?

Depending on the project and the required permits or approvals, one or more ministries may delegate procedural aspects of the Crown's duty to consult to the proponent. The proponent may contact individual ministries for guidance related to the delegation of procedural aspects of consultation for ministry-specific permits/approvals required for the project in question. Proponents are encouraged to seek input from all involved Crown ministries sooner rather than later.

Technical Advisory Committee Meeting #1

August 6, 2015

VAUGHAN
Public Works

HDR

Agenda

- Welcome and introductions
- Purpose of the meeting
- Study schedule
- Study overview and key issues
- Background transportation conditions
- Transportation needs
- Next steps

Purpose of today's meeting

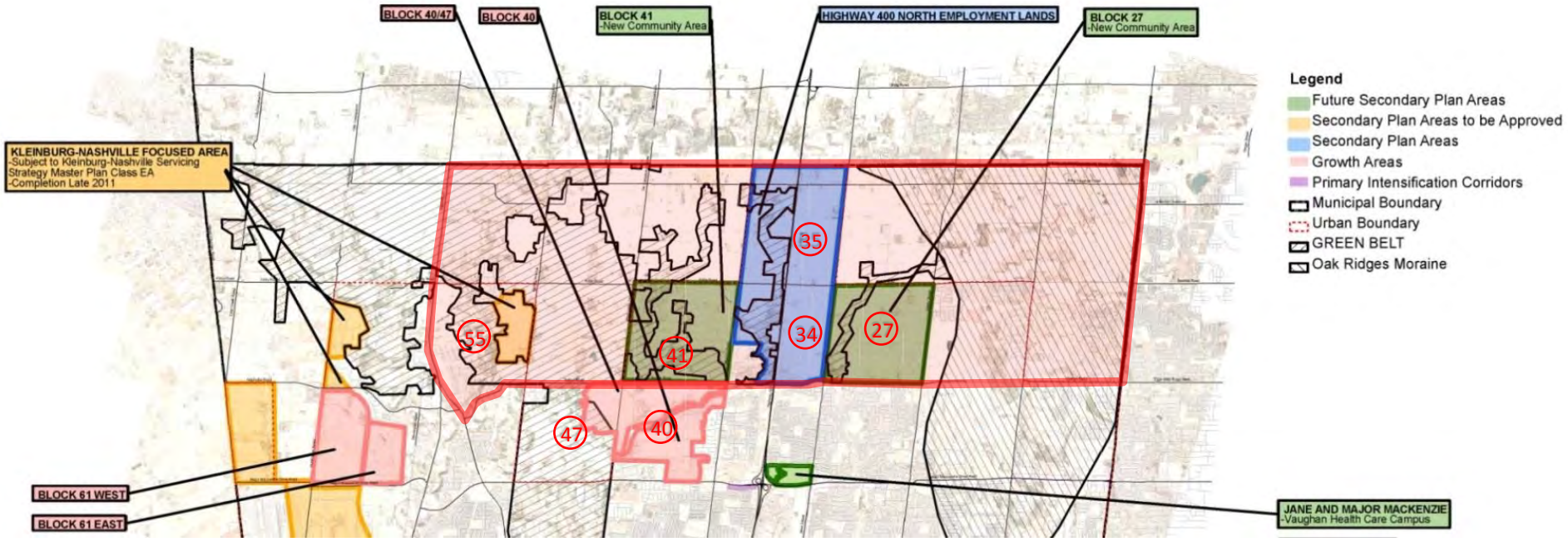
- Introduce the North Vaughan and New Communities TMP
- Highlight key issues and goals
- Summarize existing and future conditions
- Summarize future needs

Study Schedule

- Stakeholder Visioning Workshop – August 19, 2015
- PIC#1 – October 13, 2015 (tentative)
- Identification of Alternative Solutions - Fall 2015
- Community Workshop - November 2015 (tentative)
- TAC Meeting #2 - February 2016
- Stakeholder Workshop #2 – February 2016
- PIC#2 - Late March 2016
- Draft Report Summer 2016
- TAC#3 and Stakeholder workshop #3 Summer 2016
- Final Report Fall/Winter 2016

Study Overview

- Four growth areas in the northern part of the City including:
  - Blocks 27 and 41 New Community Areas
  - Blocks 34 and 35 Highway 400 North Employment Lands
  - Kleinburg-Nashville Focused Area (Block 55 East)
  - Blocks 40 and 47 Major Growth Areas



Study Overview

- Develop a well-integrated, multi-modal, sustainable transportation network
- Accommodate growth to 2031 and beyond
- Assess Block 27 and Block 41 Transportation Networks internally and for connectivity to broader NVNCTMP study area
- Planning for potential Kirby GO Station
- Pedestrian and Cycling Network Plan
- Phasing and Implementation Plan

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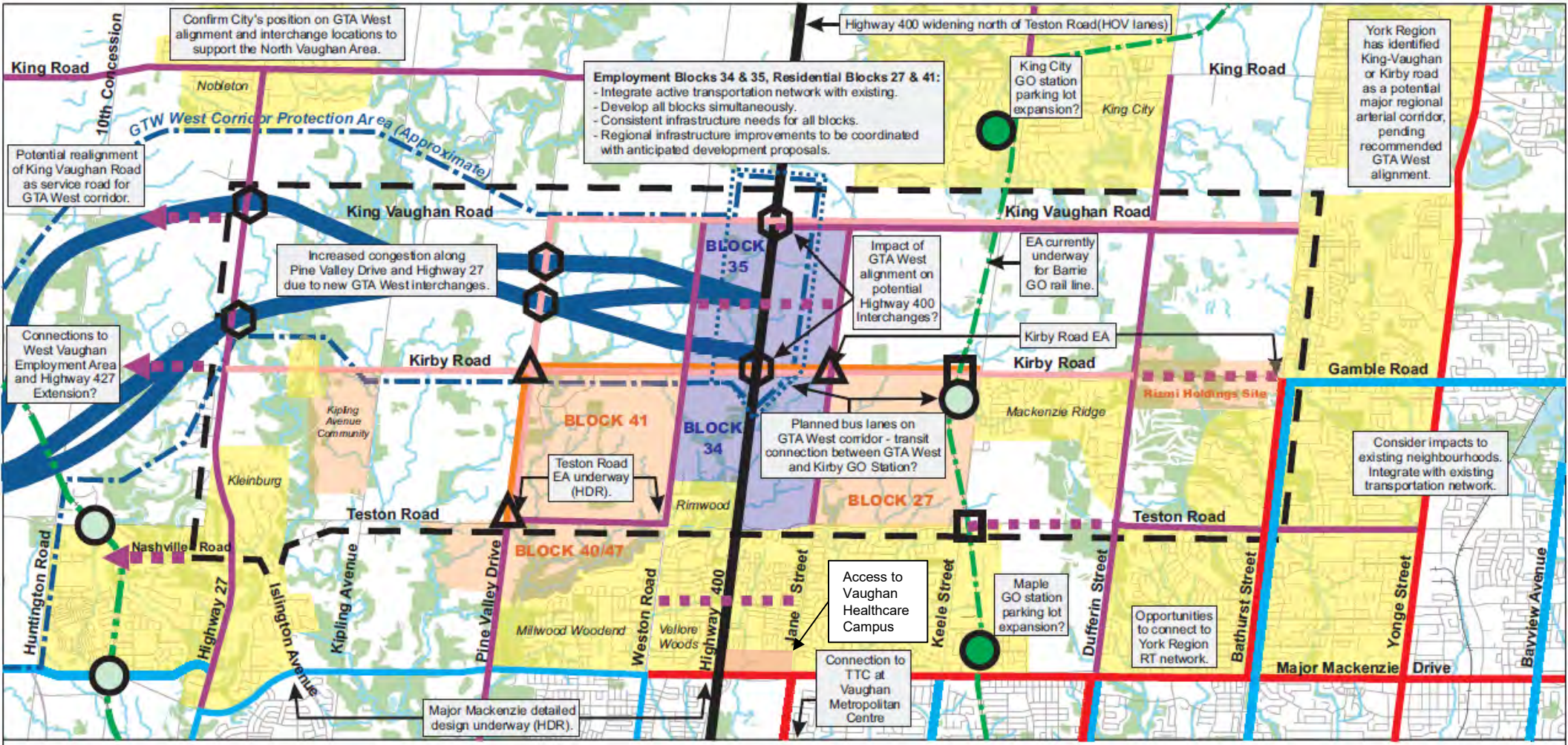
Key Issues

North Vaughan and New Communities Transportation Master Plan



Legend

- Roads
- Railroad
- Watercourse
- Wetland / Waterbody
- Wooded Area
- Study Area Boundary
- Potential Jurisdictional Transfers
- Urbanization
- York Region Road Improvement
- Potential New Connections
- Transit Priority Corridors
- Planned Rapid Transit Route
- Potential GO Rail Station (Kirby GO Station)
- Existing GO Rail Station
- Rail Grade Separation
- Planned Regional Express Rail (All-day Two-way Service)
- Planned Regional Express Rail (Peak Period One-way Service)
- Jog Elimination
- Potential Highway Interchange
- Potential Freeway-to-Freeway Interchange Zone
- GTA West Short List of Route Alternatives

North Vaughan
Transportation Master Plan
Constraints and Opportunities

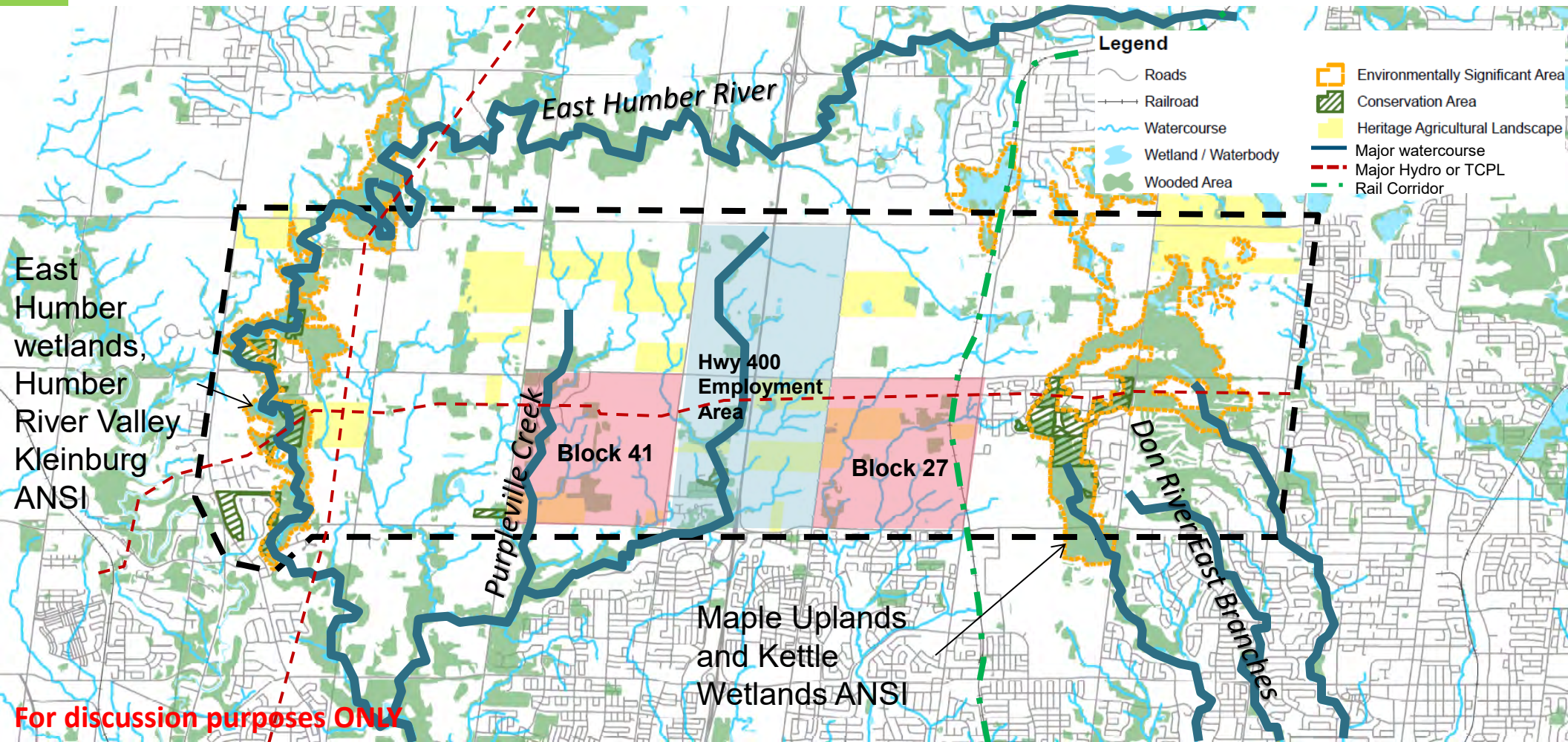
0 0.75 1.5 3 km

1:50,000

For discussion purposes ONLY

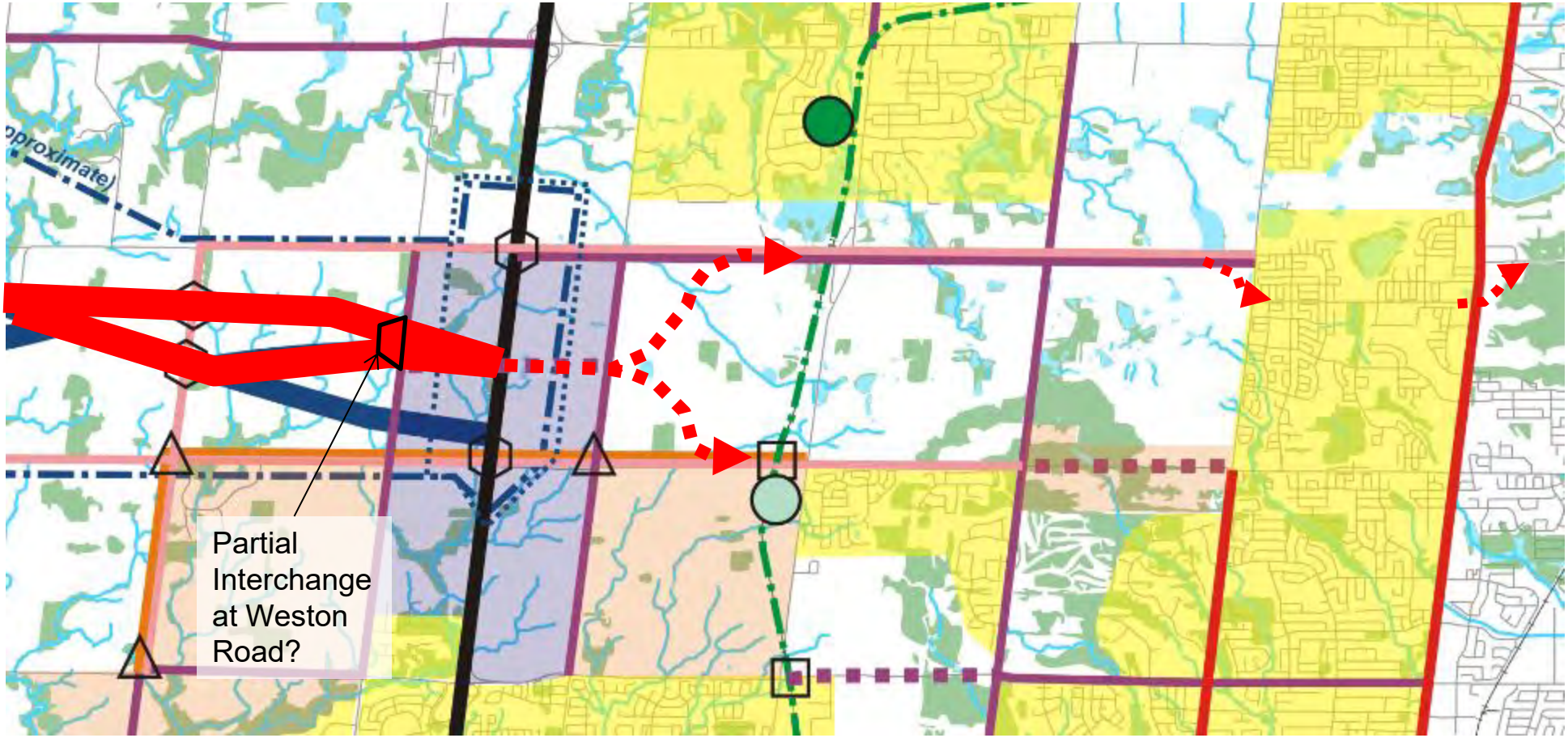
Constraints – Natural Environment and Utilities

- Redside Dace – East Humber River, Purpleville Creek, Don River East Branch
- East Humber provincially significant wetlands
- ANSIs: Humber River Valley Kleinburg, Maple Spur Channel, Maple Uplands and Kettles Candidate



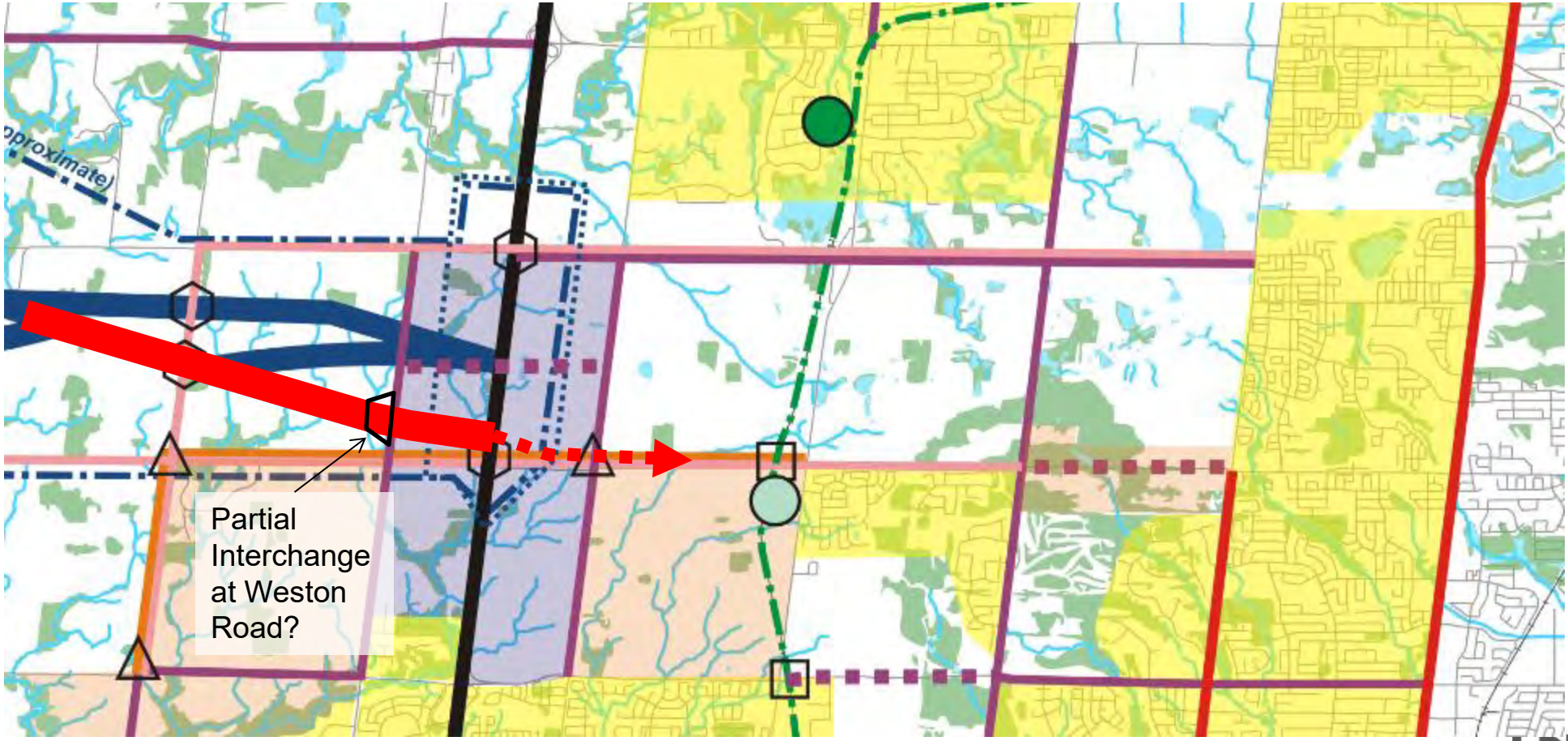
Impact of GTA West on Transportation Network

- Midblock Terminus Options for a Mid-York Corridor
- King-Vaughan will require jog eliminations at Bathurst and Yonge
- Kirby will require a new connection Dufferin to Bathurst and new IC at Hwy 404



Impact of GTA West on Transportation Network

- GTA West south terminus at Kirby
- Precludes Kirby Interchange with Hwy 400
- Kirby as potential Mid-York E-W Corridor; would require extension and a Hwy 404 interchange at 19th Ave



Summary of Constraints / Opportunities

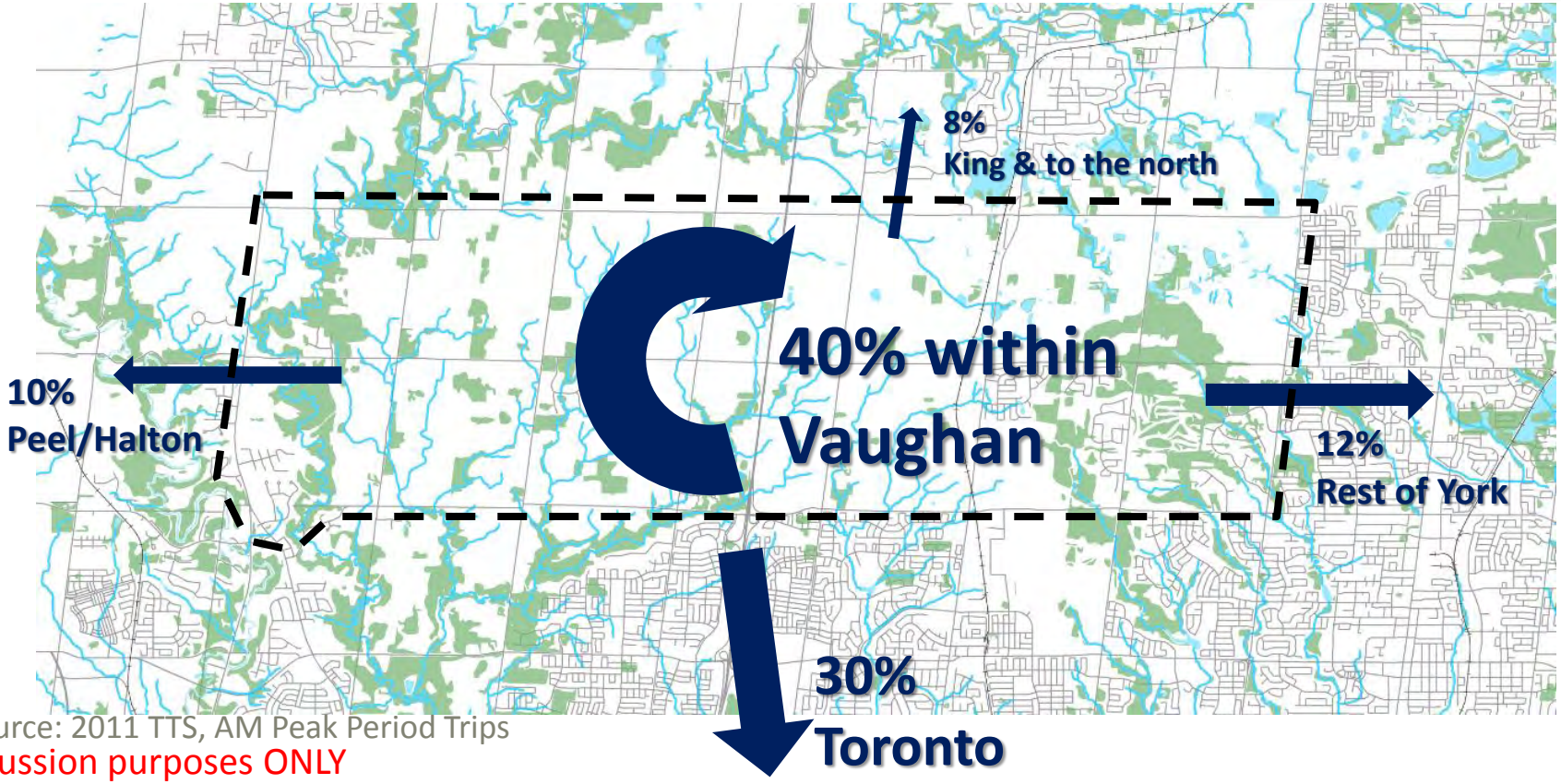
- Planning for GTA West
- Missing Links – Teston and Kirby
- Utilities – TCPL, major north-south hydro corridor
- Proximity of GO line to Keele Street – challenging grade separations
- Highway 400 crossings
- Jogs
  - Pine Valley and Teston (Ongoing Teston EA)
  - Pine Valley and Kirby
  - Jane and Kirby
- Grade Separations – Kirby rail crossing

BACKGROUND
TRANSPORTATION CONDITIONS

Travel Patterns

- Primarily rural communities, 90% auto trips
- Low self-containment (within Vaughan)
- Primary destination to Toronto

Mode Share	NVNCTMP Primary Study Area	City Wide
Walk	1%	5%
Cycle	0%	0%
YRT	6%	9%
GO	3%	3%
Auto Passenger	12%	15%
Auto Driver	78%	68%



Source: 2011 TTS, AM Peak Period Trips

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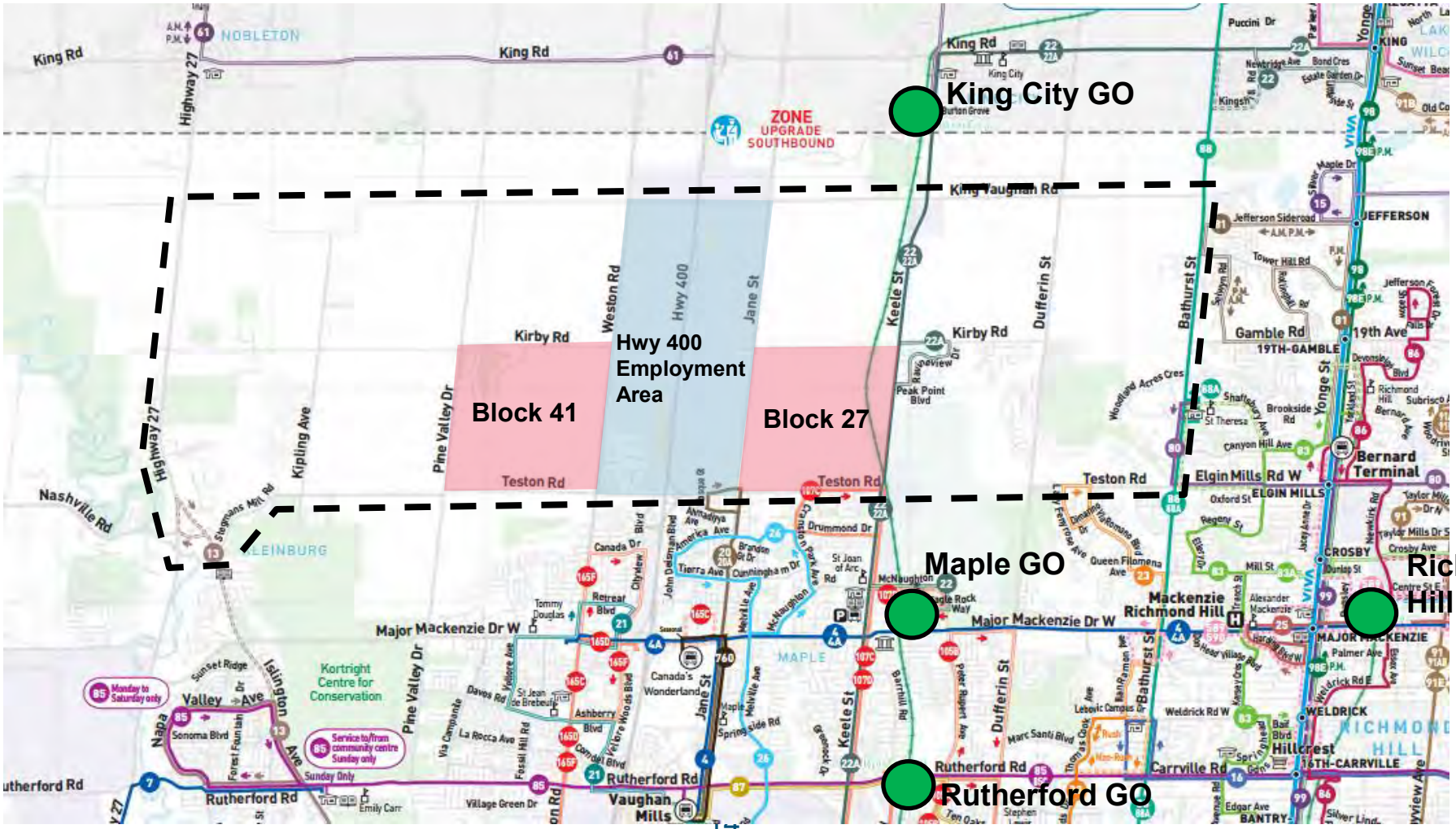
Transit Service

North Vaughan and New Communities Transportation Master Plan

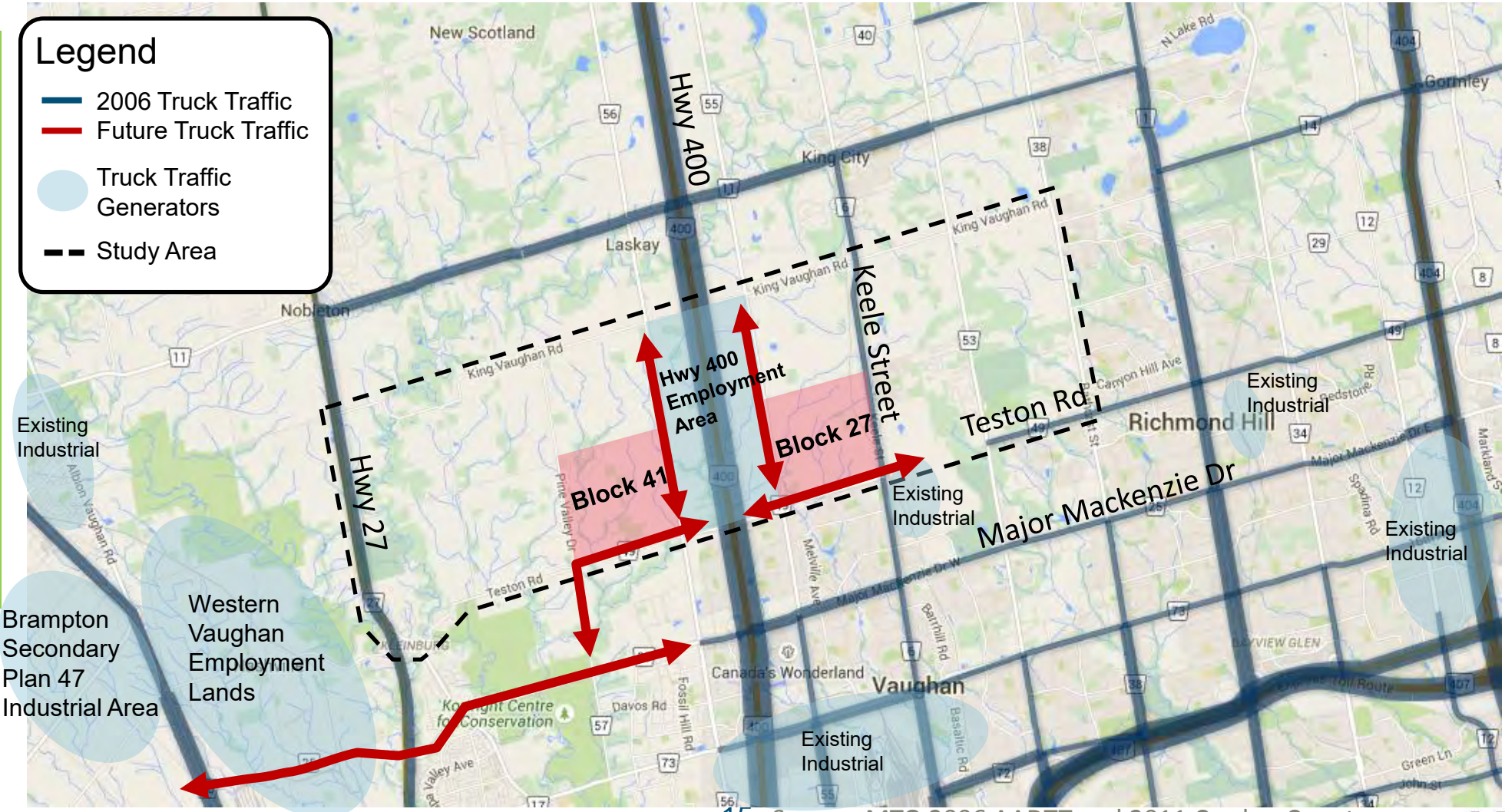
- **YRT service** via YRT Routes 13 Islington, 22 Keele, 88 Bathurst, and community services south of Teston Rd
- **Commuter transit service** to and from Toronto via GO Rail during peak periods and GO Bus service during off peak periods



HDR

Truck Traffic

- Hwy 27, Hwy 400, and Keele are major truck routes within the Study Area
- Teston Road is a truck route in the east end of the study area and through the Town of Richmond Hill
- Future east-west connectivity to support new growth areas, truck traffic generators



Source: MTO 2006 AADTT and 2011 Cordon Count program

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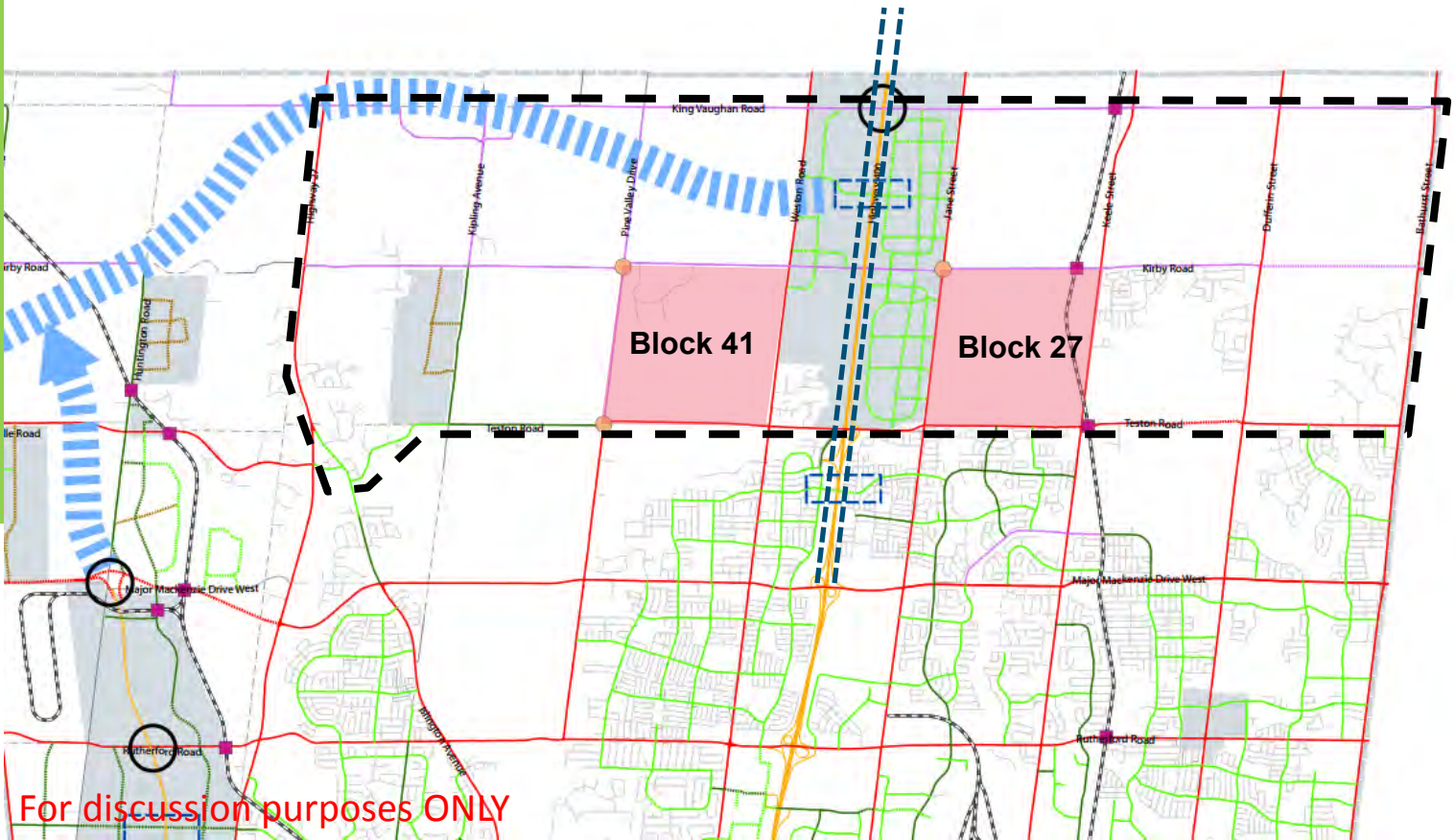
North Vaughan and New Communities Transportation Master Plan

Future Planned Highway and Road Improvements

- GTA West
- 400 Widening (Major Mackenzie to King Rd HOV lanes)
- 427 Extension to Major Mackenzie and GTA West
- Proposed Collector Rd system in 400 Employment Area
- Kirby and Teston missing links, Hwy 400 midblock crossings



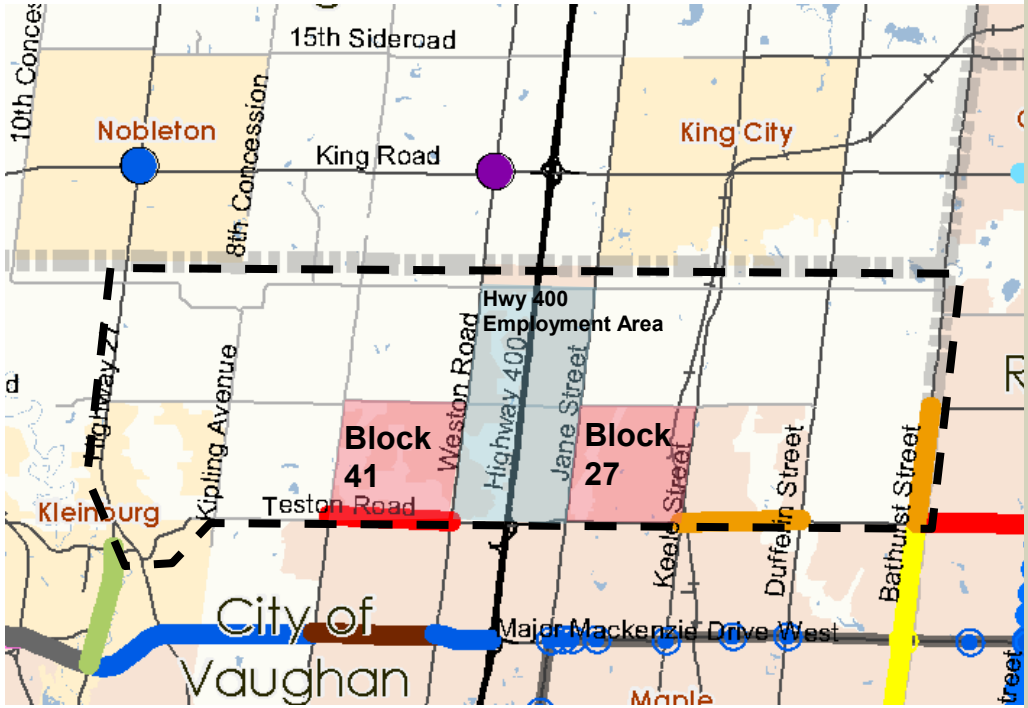
SCHEDULE 9
Future Transportation Network

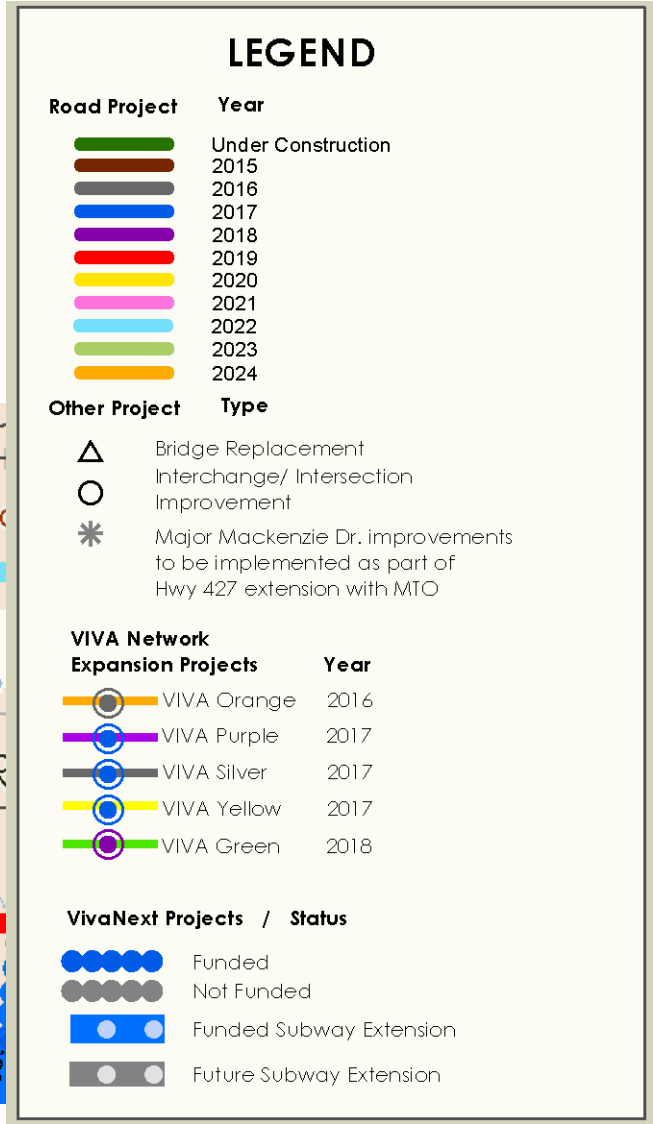
- Freeway (Provincial)
- Major Arterial (Regional)
- Minor Arterial (36 m)
- Major Collector (26 m)
- Minor Collector (24 m proposed/23 m existing)
- Special Classification (Refer to Secondary Plans)
- Local
- Proposed New Road Link[1]
- GTA West Corridor[2] & Hwy. 427 extension[3]
- Interchange Improvements
- New Interchanges
- Grade Separation
- Jog Elimination
- Future Hwy 400 Series Road Crossings
- Railway
- Areas subject to Secondary Plans
- Municipal Boundary

For discussion purposes ONLY

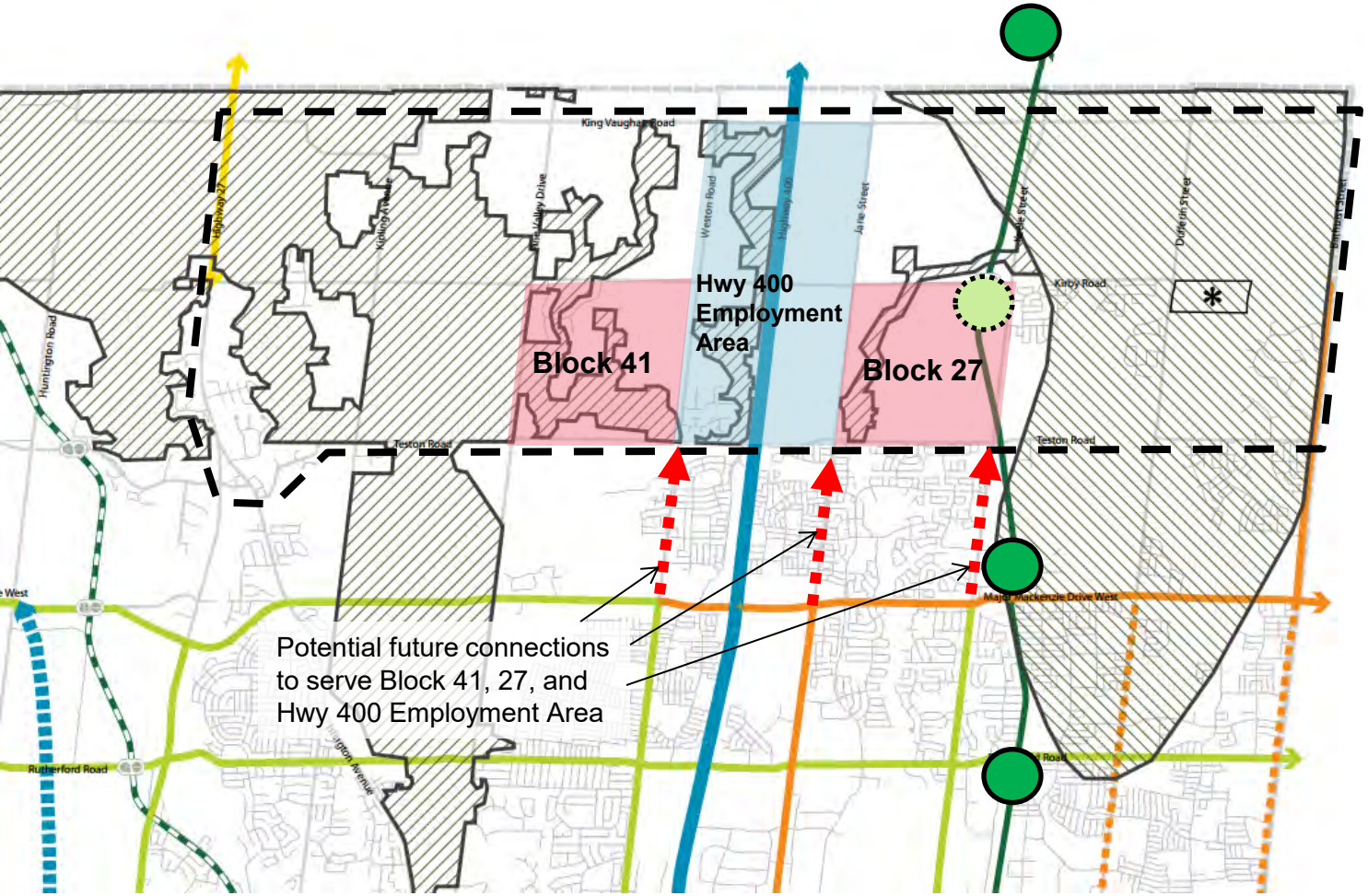
Future Planned Improvements – York Region

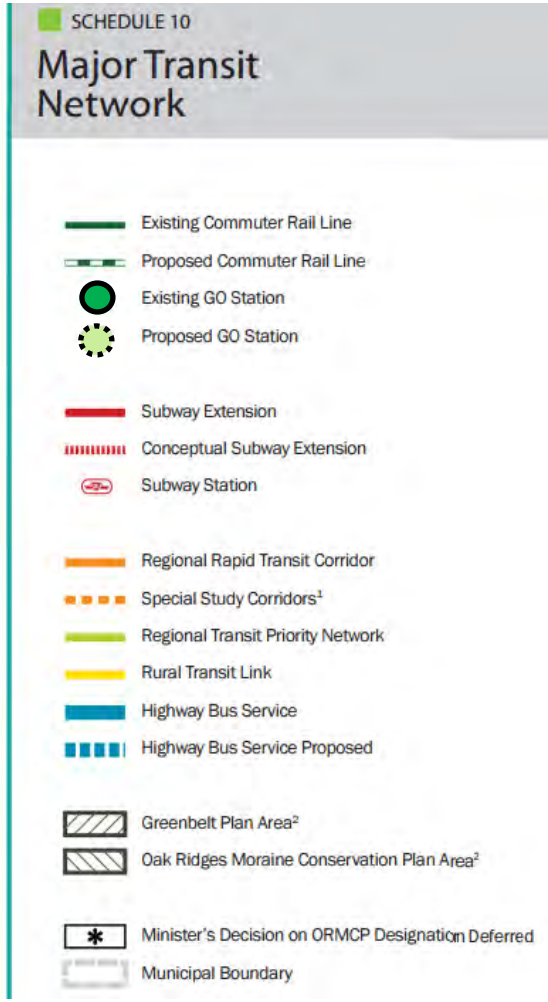
- York Region TMP 2009 and ongoing update
- Roads, Transit, Active Transportation
- 10 year Roads Capital Program



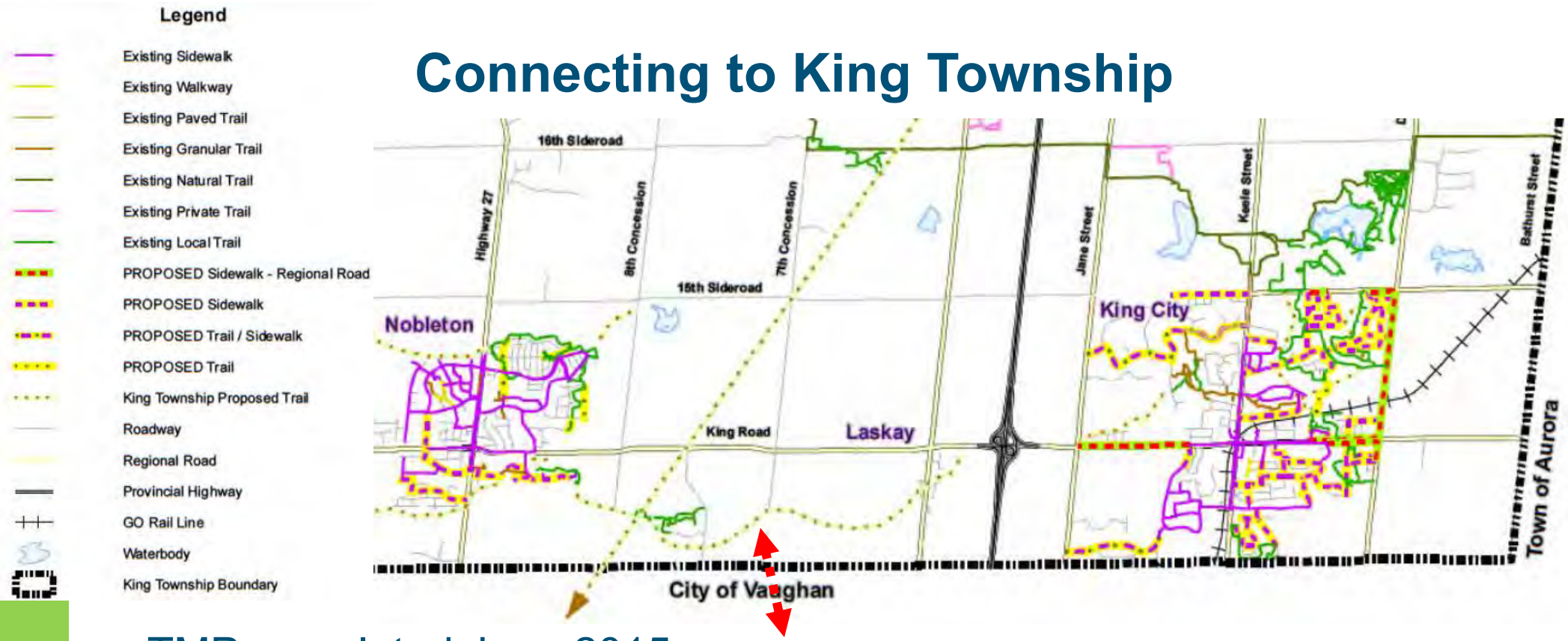


Future Planned Transit Improvements
Metrolinx, YRT





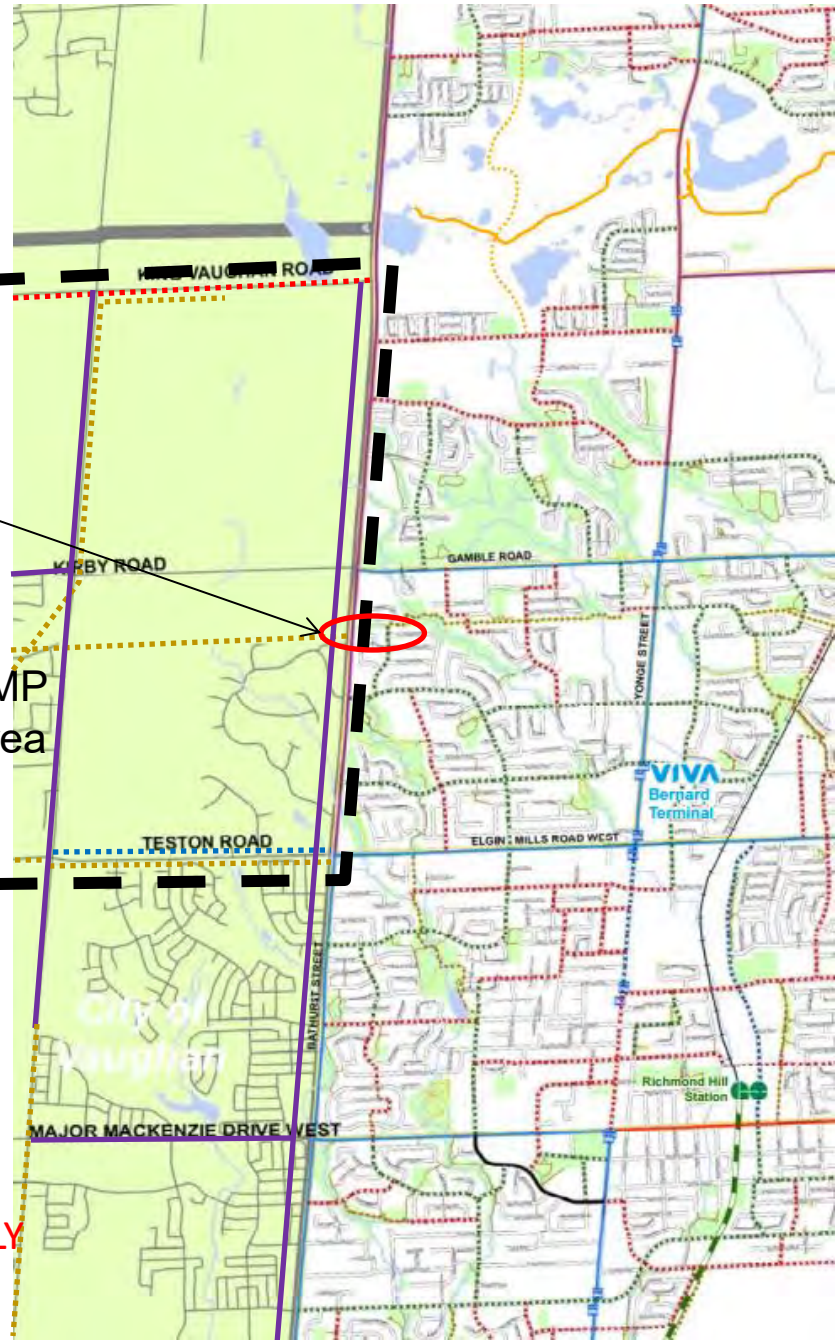
Connecting to King Township



- TMP completed June 2015
- Most road, trail connections via Regional Roads
- Connect trail system along Pine Valley Drive – possible connection to King's trail system

Connecting to the Town of Richmond Hill

- Road connections mostly via Regional Roads
- Improve connections for trail system – Town of RH connection to Vaughan Pipeline Trail



NVNCTMP
Study Area

Legend

Proposed Richmond Hill Cycling and Trail Network

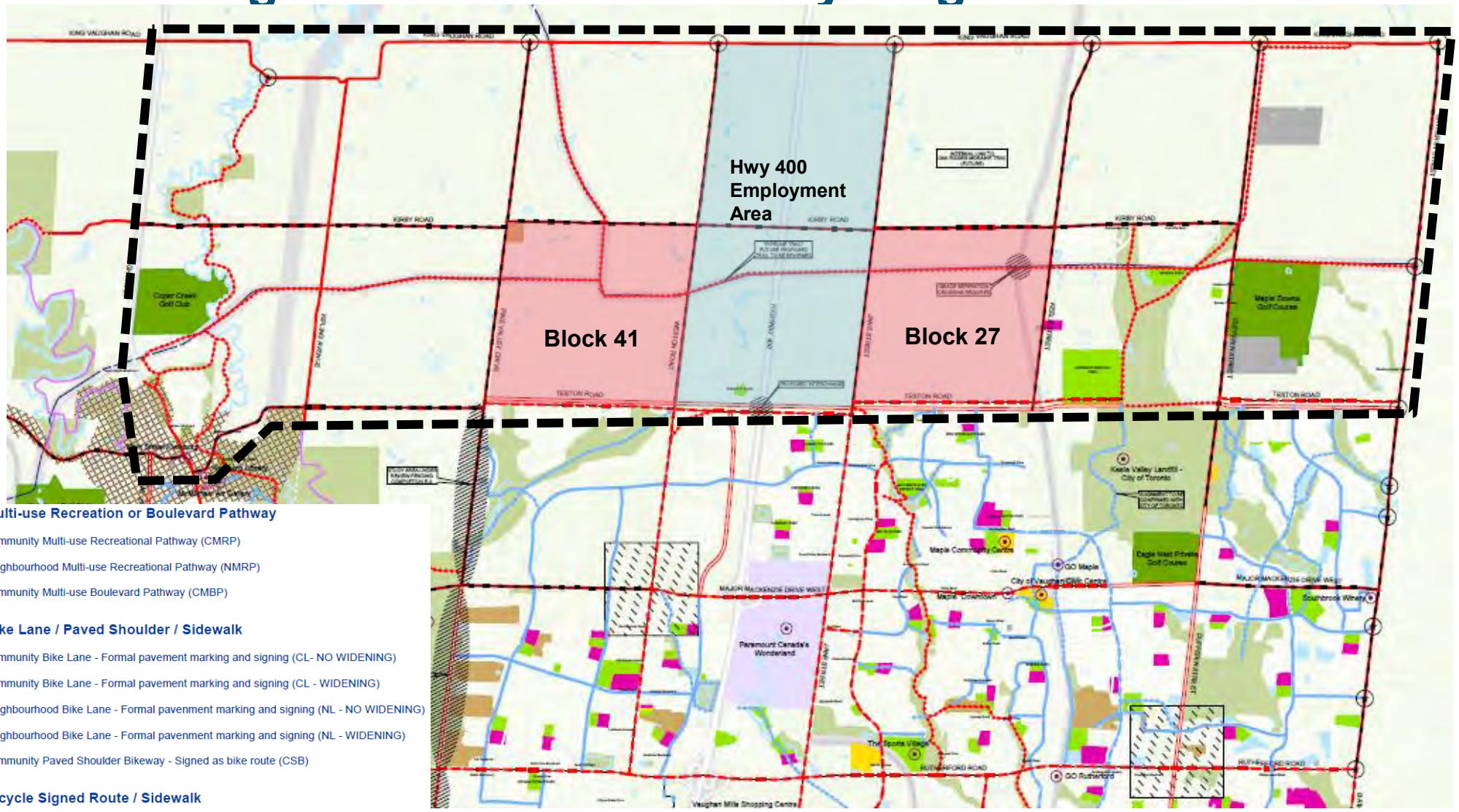
- Existing Bike Lane
- Proposed Bike Lane
- Proposed Signed Only Bike Route
- Proposed Signed Only Bike Route with or without Shoulder Edge Lines or Sharrows
- Proposed Multi-Use Trail

Planned York Region Pedestrian and Cycling Network

- Bike Lane
- Paved Shoulder Bikeway
- Signed Bike Route
- Multi-Use Trail
- Lake to Lake Route (Lake Ontario to Lake Simcoe)

For discussion purposes ONLY

Vaughan Pedestrian and Cycling Master Plan



Class 1 Multi-use Recreation or Boulevard Pathway

- Community Multi-use Recreational Pathway (CMRP)
- Neighbourhood Multi-use Recreational Pathway (NMRP)
- Community Multi-use Boulevard Pathway (CMBP)

Class 2 Bike Lane / Paved Shoulder / Sidewalk

- Community Bike Lane - Formal pavement marking and signing (CL- NO WIDENING)
- Community Bike Lane - Formal pavement marking and signing (CL - WIDENING)
- Neighbourhood Bike Lane - Formal pavenment marking and signing (NL - NO WIDENING)
- Neighbourhood Bike Lane - Formal pavenment marking and signing (NL - WIDENING)
- Community Paved Shoulder Bikeway - Signed as bike route (CSB)

Class 3 Bicycle Signed Route / Sidewalk

- Neighbourhood Signed Bike Route - No formal facility or pavement markings (NR)
- Community Signed Bike Route - No formal facility or pavement markings (CR)

Class 4 Trail Facility

- Footpath / Hiking Trail

For discussion purposes ONLY

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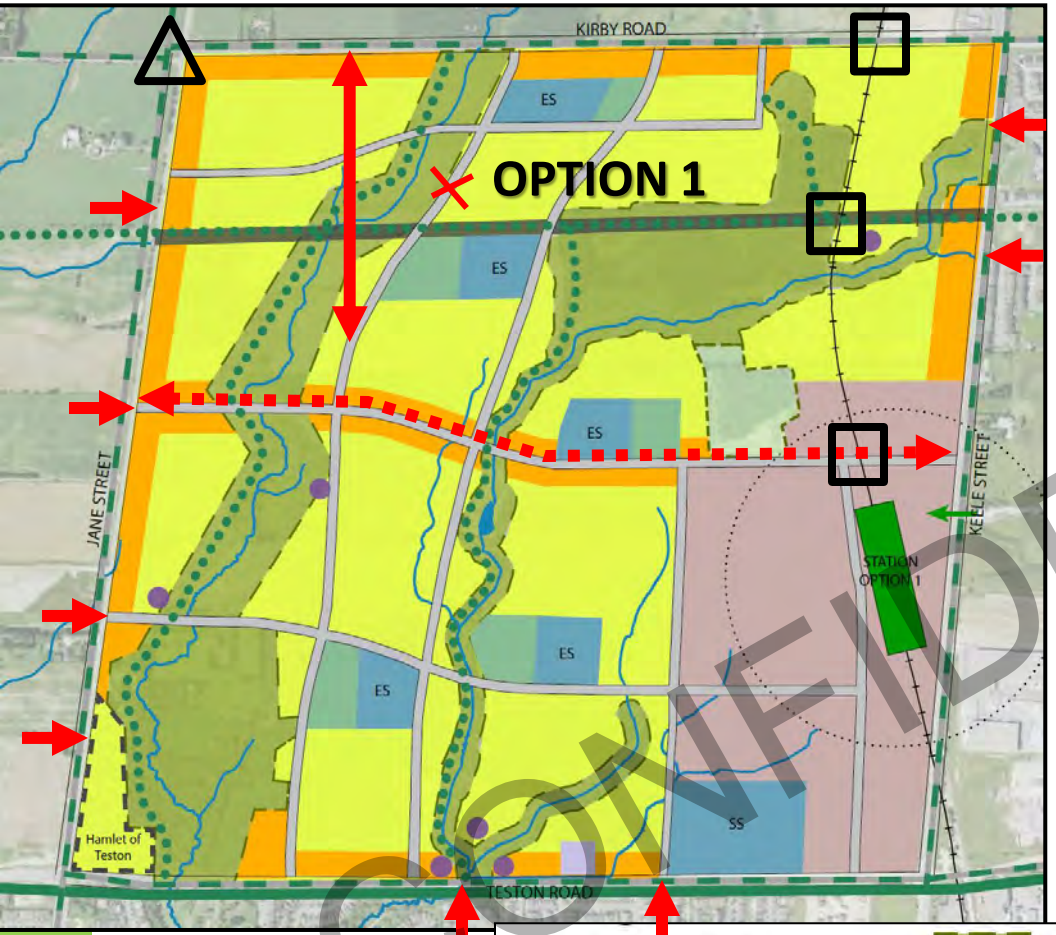
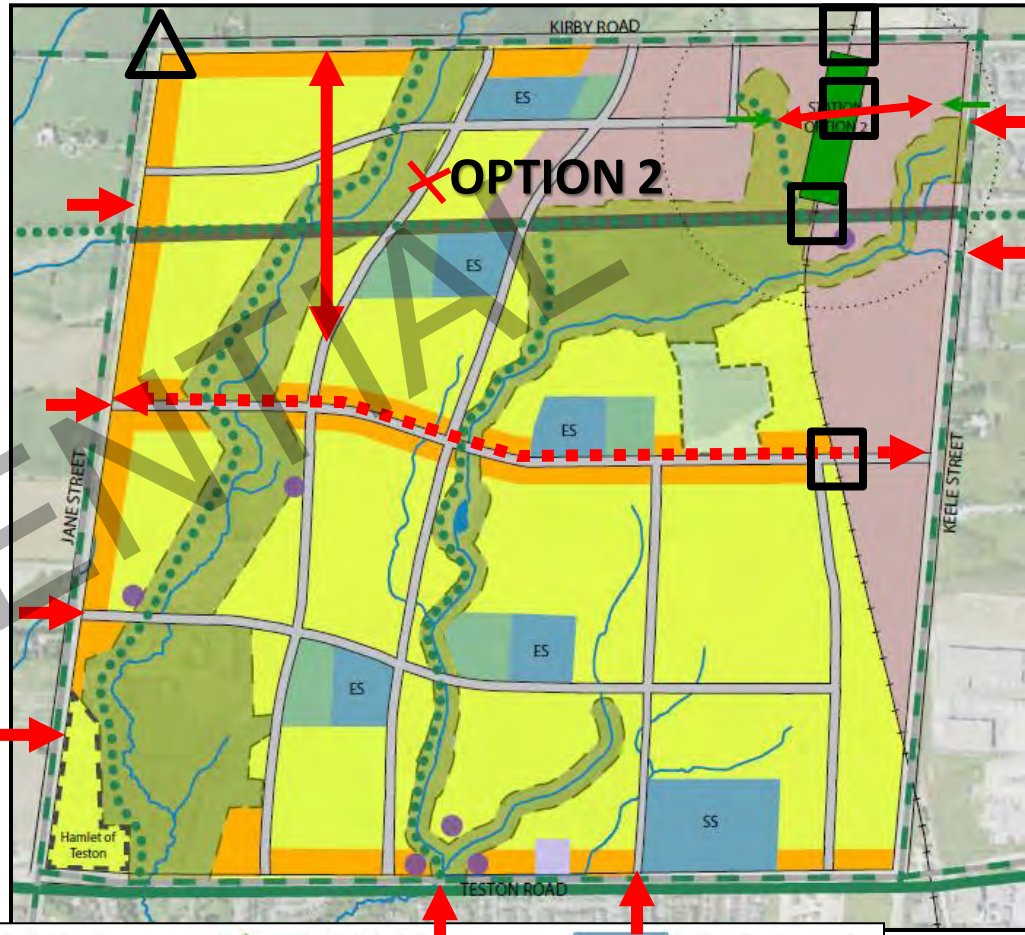
North Vaughan and New Communities Transportation Master Plan

Block 27 Preliminary Transportation Network





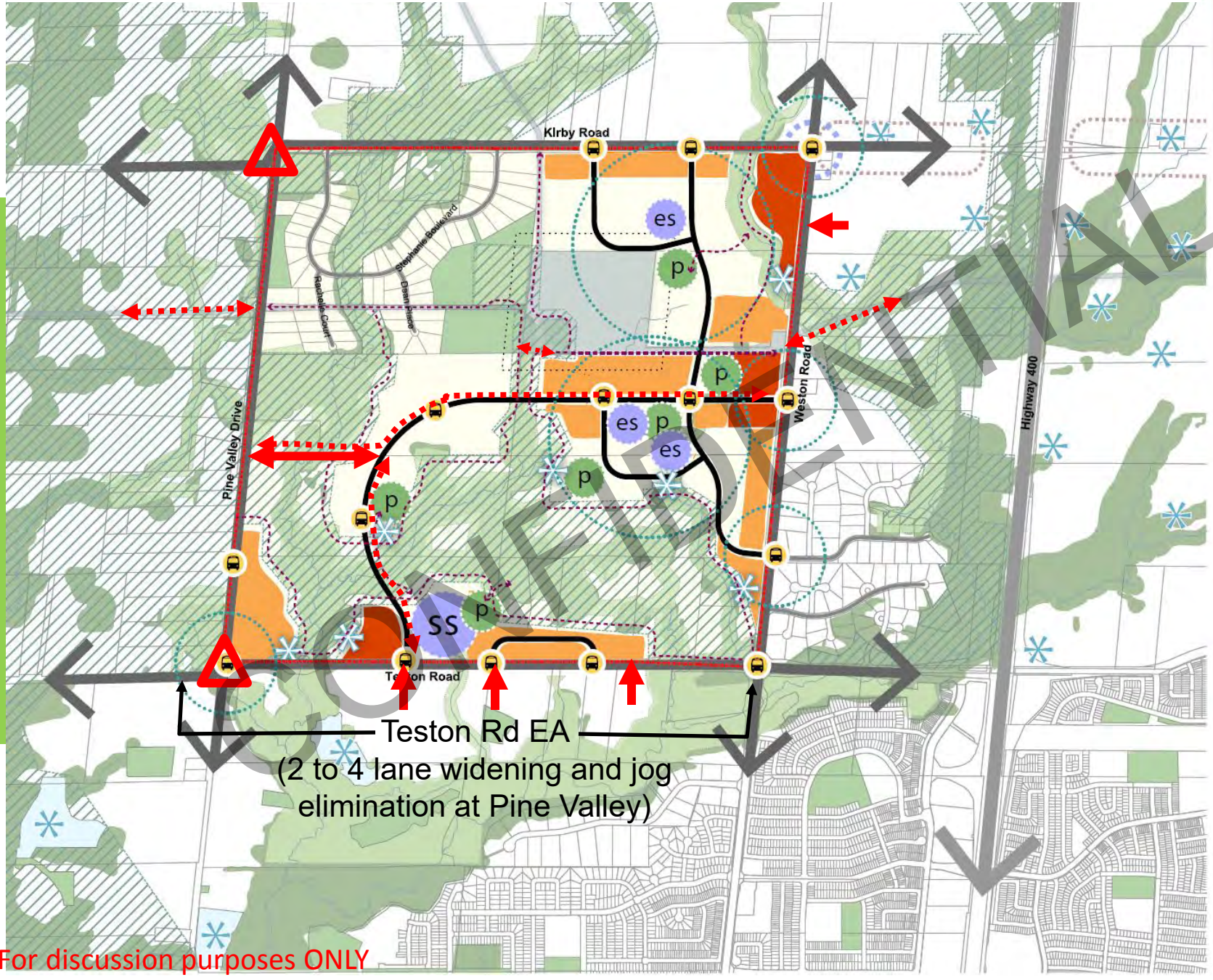
- Potential Grade Separation
- Potential Jog Elimination
- Potential Road Connection
- Potential Cycling Connection

- Railway Line
- Water
- Community Paved Shoulder Bikeway - Signed as Bike Route (CSB)
- Community Multi-use Recreational Pathway (CMRP)
- Community Multi-use Boulevard Pathway (CMBP)
- Natural Heritage Network
- Potential Natural Heritage Network
- TransCanada Pipeline
- Collector Road
- Hamlet Character Area
- Potential GO Station Driveway Access
- Potential GO Station Location
- 400 m Walking Radius
- SWM Facility Location
- Place of Worship
- School (Elemetary, Secondary)
- Park
- Low - Medium Density Residential
- Medium Density Residential
- Potential GO Station/ Local Centre Precinct

*SWM facility locations as depicted are conceptual, and are to be established by the Subwatershed Study and MESP

For discussion purposes ONLY

Block 41 Preliminary Transportation Network



VAUGHAN BLOCK FORTY-ONE SECONDARY PLAN

July 15, 2015

41

EMERGING LAND USE CONCEPT PLAN

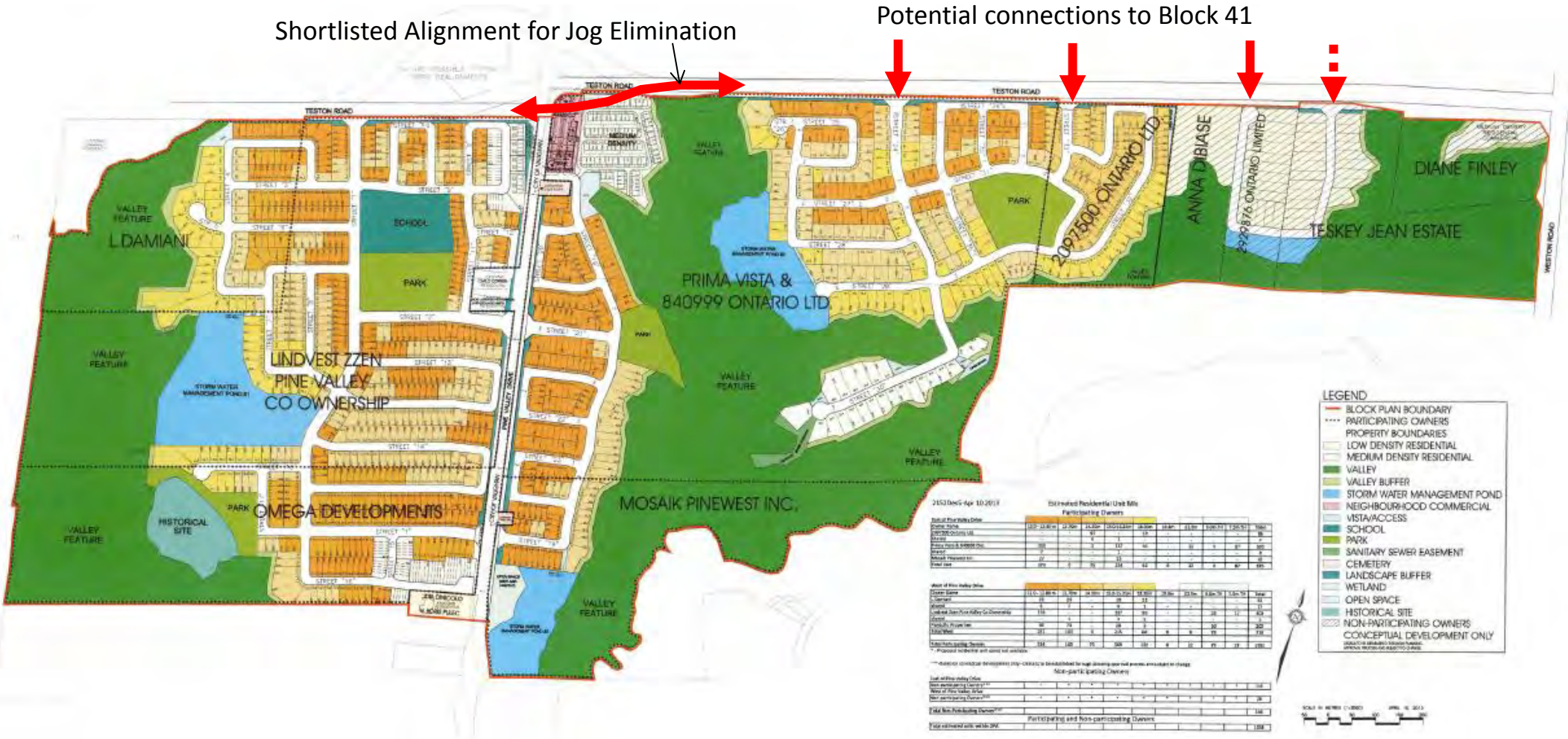
Option C

- Greenbelt Boundary
- Natural Heritage Network (Core Features) (Vaughan OP, Schedule 2, Currently Under Review)
- North-South Natural Heritage Network (Proposed amendment yet to be approved)
- Parks and Open Space
- Employment Activity Centre
- Gateway (Significant Interface Area)
- Trans Canada Compressor Station and Pipeline
- Stormwater Management Facility
- Highway 400
- Existing Arterial Roads
- Existing Residential Roads
- Proposed Collector Roads
- Mixed Use Commercial
- Medium / High Density Residential
- Low / Medium Density Residential
- Schools (Elementary / Secondary)
- Proposed Parks
- Proposed Stormwater Management Facility
- Transit Stop
- 400m (5min.) and 200m (2.5min.) Walking Radii
- Trails and Connections
- Study Area
- Potential Jog Elimination
- Potential Road Connection
- Potential Cycling Connection

0 250 500 1000 m

The Planning Partnership

Block 40-47 Plan



For discussion purposes ONLY

Land Use Forecasts and Growth

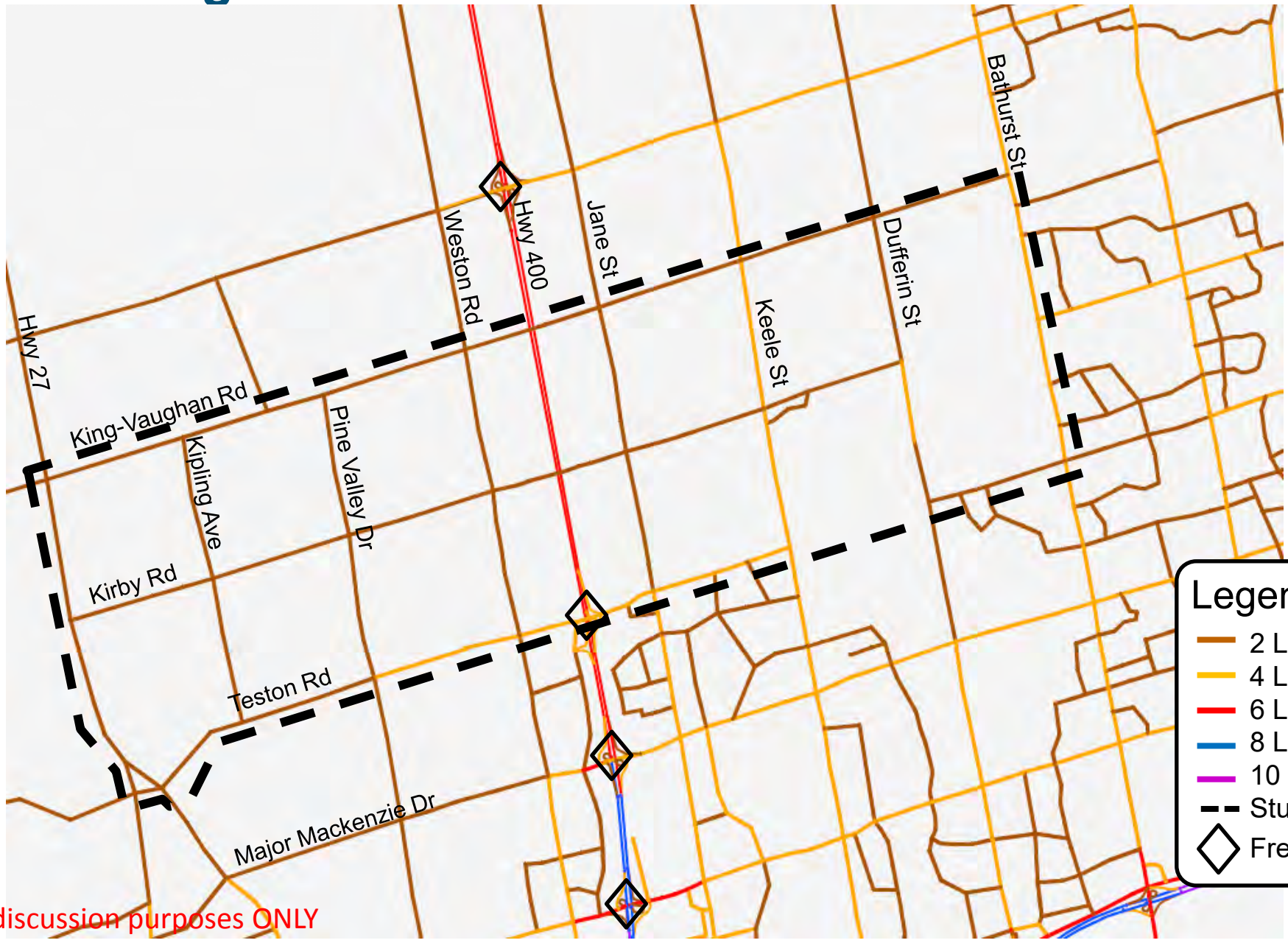
2031 Population	2006 Population	2011 Population	2031 Population
Block 27	122	112	16,710
Block 41	285	281	10,180
Block 34 - Hwy 400 North Employment	309	292	1,054
Block 35 - Hwy 400 North Employment	163	142	137
Block 42	97	94	90
Block 28	67	49	47
Block 55-Kleinburg East	1,079	1,359	5,142
Rest of NVNCTMP Study Area	4,908	6,385	6,592
TOTAL NVNCTMP Study Area	**7,030**	**8,715**	**39,952**
City of Vaughan	227,374	272,546	384,134
2031 Employment	**2006 Employment**	**2011 Employment**	**2031 Employment**
Block 27	9	28	3,165
Block 41	97	53	1,982
Block 34 - Hwy 400 North Employment	265	162	7,968
Block 35 - Hwy 400 North Employment	234	330	8,569
Block 42	0	0	0
Block 28	157	192	304
Block 55-Kleinburg East	380	389	803
Rest of NVNCTMP Study Area	385	759	813
TOTAL NVNCTMP Study Area	**1,526**	**1,913**	**23,604**
City of Vaughan	148,011	165,140	243,632

2011 to 2031:

- 32,900 additional population
- 22,100 additional employment

Source: York Region May 2013

Existing # of Lanes



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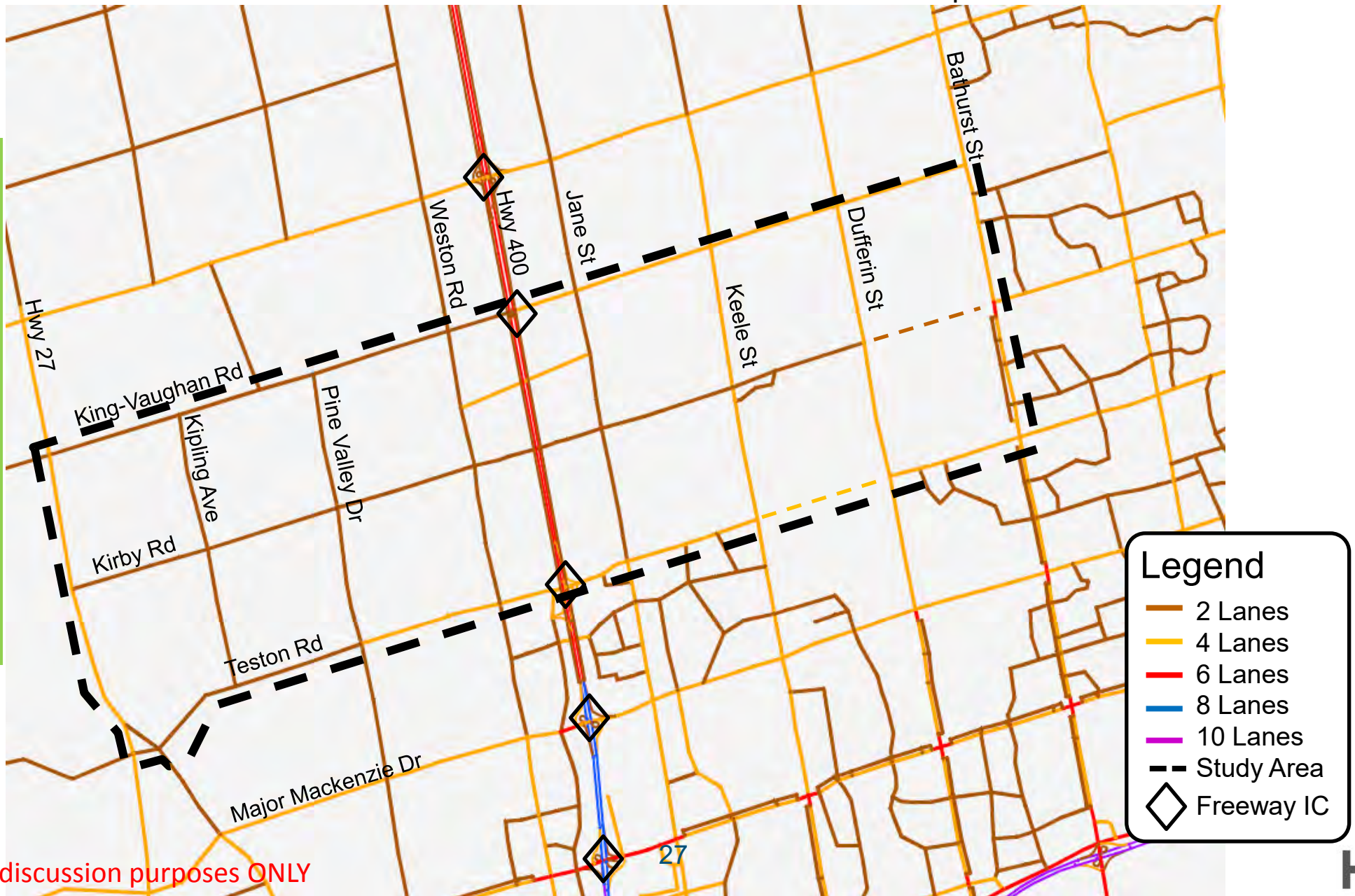
North Vaughan and New Communities Transportation Master Plan

Planned 2031 # of Lanes

Note: Baseline assumptions to be modified

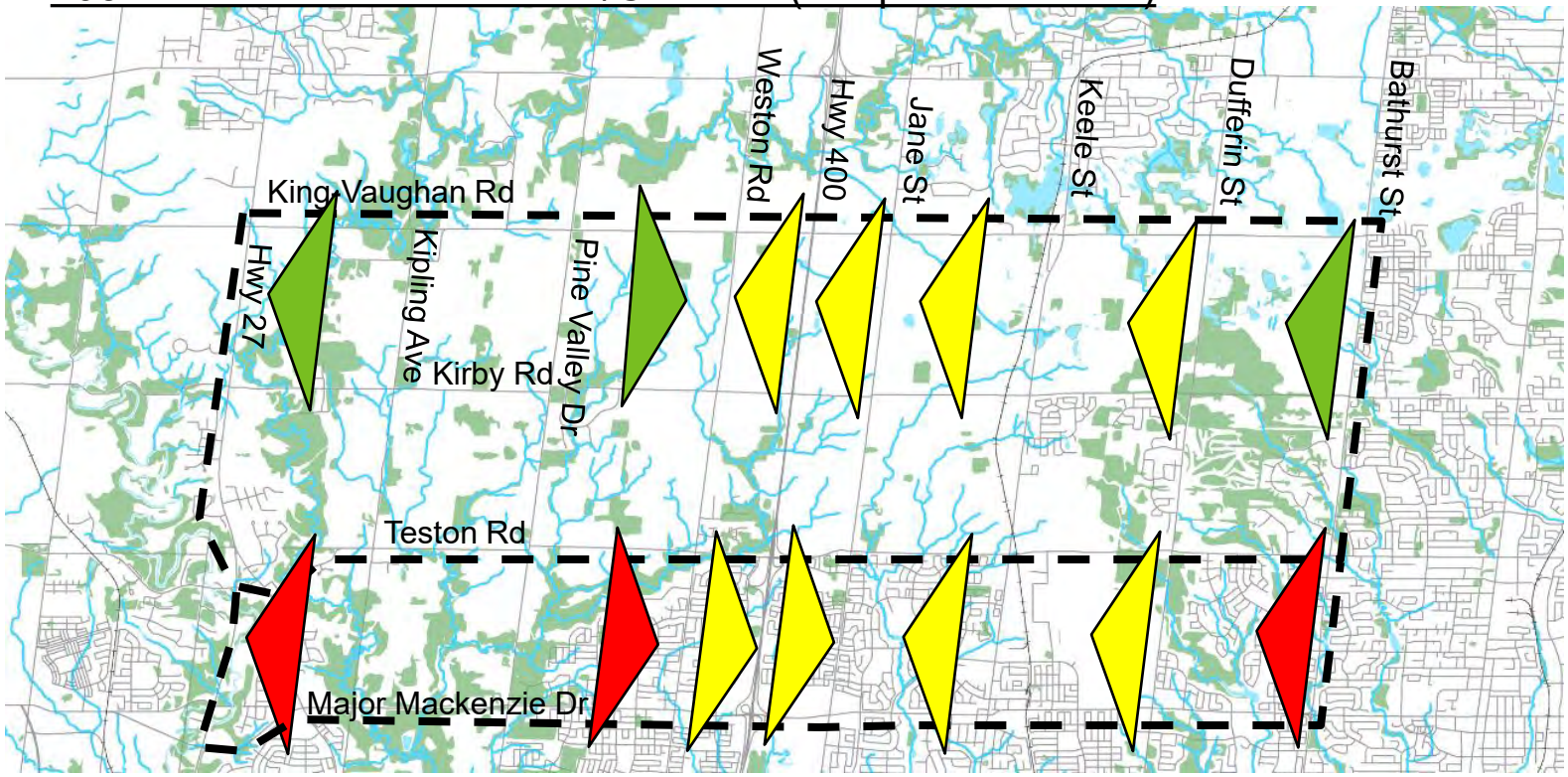


For discussion purposes ONLY

Screenline East-West Traffic V/C Ratios

- Overall study area includes Major Mackenzie Dr
- Existing issues along Major Mackenzie Dr in both directions
- By 2031, traffic approaching Highway 400 is congested

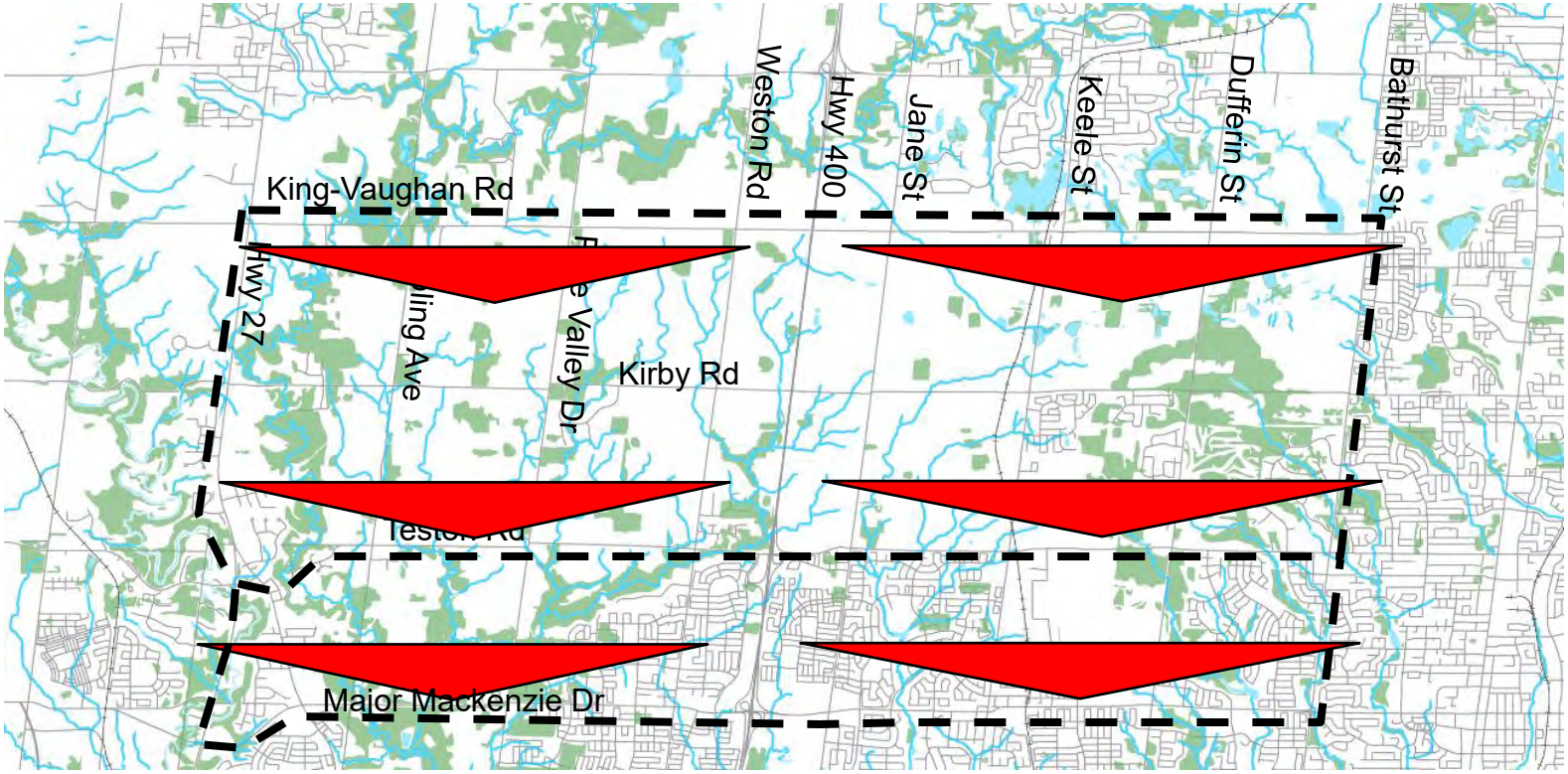
2031 East-West Screenline V/C Ratios (AM peak direction)



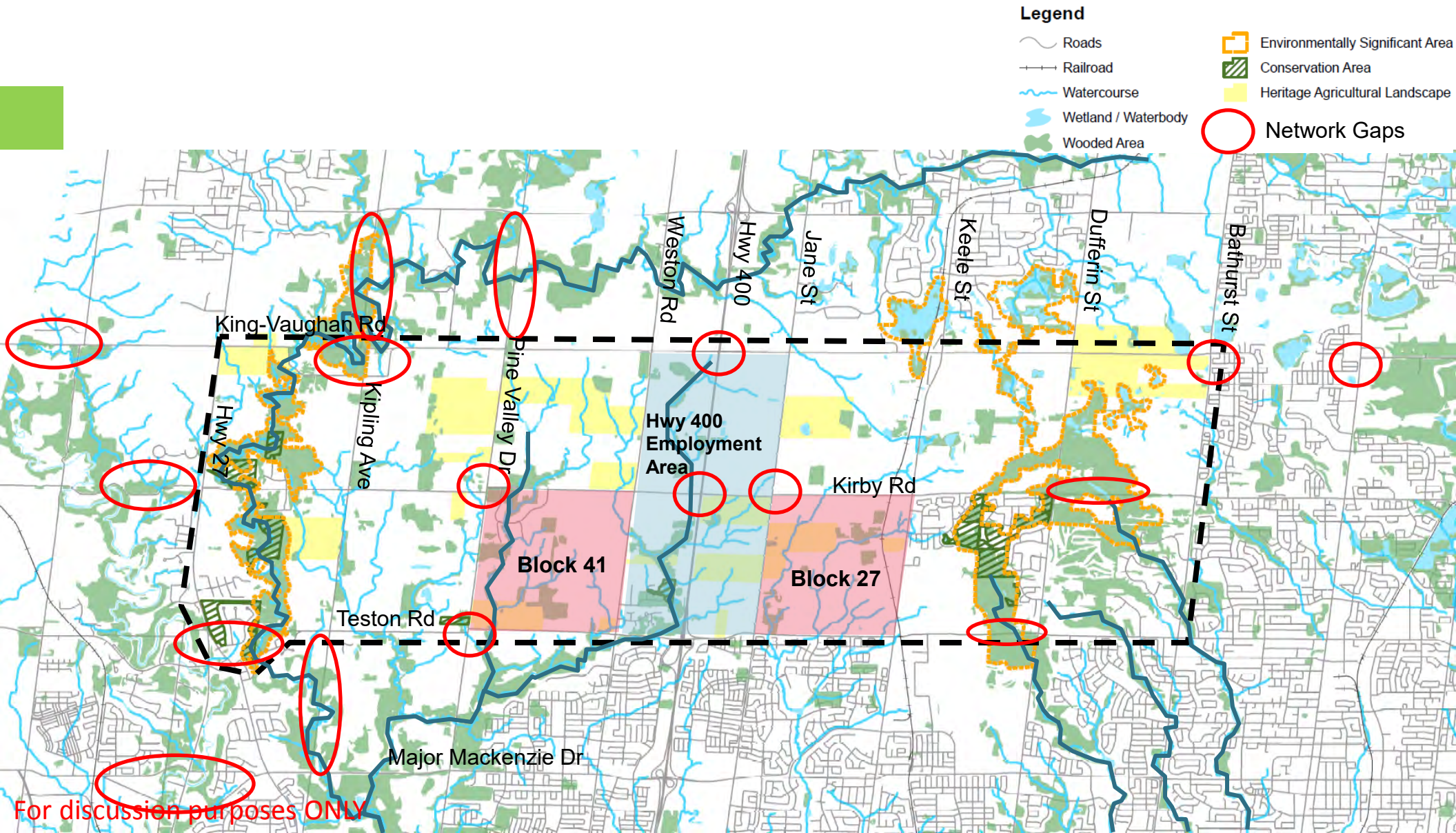
Screenline North-South Traffic V/C Ratios

- Significant SB traffic congestion today and by 2031

2031 North-South Screenline V/C Ratios (AM Peak Direction)



Network Connectivity



Cross-section and Vertical Alignment Deficiencies

- Much of the rural road network has deficient cross-section width – no shoulders
- Opportunity to improve substandard cross-sections and vertical grades


King-Vaughan over Hwy 400


Kirby under Hwy 400

Summary of Needs and Opportunities

- Capacity Needs
- Network Connectivity and Continuity
  - Missing links
  - Connections to the provincial highway network
  - Role and function of roads (regional vs local)
  - Jog eliminations
- Transit network
  - Road improvements to support transit – connections to New Communities, Bathurst RT, Major Mackenzie RT
  - Rail crossing conflicts / need for grade separations / plan for RER
- Arterial road network system must support New Community development
- Active Transportation
  - Connections to existing neighbourhoods
  - Connections to adjacent municipalities
- Deficient cross-sections
- Vertical alignment and pavement structure deficiencies

Next Steps / Schedule

- Stakeholder Visioning Workshop – August 19
- PIC#1 – October 13, 2015 (Tentative)
- Identification of Alternative Solutions - Fall 2015
- Community Workshop - November 2015 (Tentative)
- TAC Meeting #2 - February 2016
- Stakeholder Workshop #2 – February 2016
- PIC#2 - Late March 2016
- Draft Report Summer 2016
- TAC#3 and Stakeholder workshop #3 Summer 2016
- Final Report Fall/Winter 2016

Questions?

Meeting Minutes

Project:	North Vaughan and Northern Communities Transportation Master Plan
Subject:	TAC Presentation #2
Date:	Friday, March 10, 2017
Location:	City of Vaughan
Attendees:	Jonathan Chai – HDR Catherine Curak – HDR Winnie Lai – City of Vaughan Selma Hubjer – City of Vaughan Marta Roias – City of Vaughan Dorothy Kowpak – City of Vaughan Tony Iacobelli – City of Vaughan Bhakti Rathod – YRT/Viva Gabriella Gilchrist – MNRF Steven Strong – MNRF Mark Heaton – MNRF Margaret Mikolajczak – MTO Steve Mota – York Region (YR) Vi Bui – York Region (YR) Shahid Matloob – York Region (YR) David Van Veen – Township of King Lauren Bates – Smart Commute NTV June Little – TRCA Metrolinx – Naren Garg (called in)
Prepared By:	Catherine Curak, HDR

Item No.	*Presentation Slide Ref.*	*Topic*	*Action Item*	*Status / Timing*
1	5	MNRF expressed concerns that the study does not give enough consideration to the challenges of the natural environment. YR agreed.	HDR to include the challenges of the natural environment as a key issue	Complete
2	11	Metrolinx noted that planning studies have moved away from the Four Stage Model and TTS Data and towards using an Activity Based Model for more accurate results. As the YR Model is a Four Stage Model, results between this analysis versus analysis done by Metrolinx will differ.	For information	n/a
3	16	MNRF expressed concerns about the Do Nothing scenario in regards to which projects are included in the scenario (under construction versus committed projects). They provided a status update in regards to several projects in the Study Area: • Major Mackenzie Drive (MMD) widening is complete from Highway 400 to Pine Valley Drive. • The section between Islington Avenue to Pine Valley Drive is currently in the approval stage and may go forward in 2017, however it could be deferred to	HDR to confirm these assumptions for the Do Nothing Scenario	To be completed for PIC #2

Item No.	*Presentation Slide Ref.*	*Topic*	*Action Item*	*Status / Timing*
		2018. • Construction for the widening of Highway 400 from Teston Road to King Road will begin in Summer 2017.		
4	19	YR flagged that the TRCA may have additional trails in the study area that need to be included.	TRCA to provide latest information	To receive week of March 13
5	21	MNRF wants to note that the inclusion of the "Missing Links" did not help alleviate traffic issues when comparing Alternative 1 to Alternatives 2 and 3. YR highlighted that the policy of the TMP is to provide a finer grid network to help distribute traffic as the links provide a parallel corridor.	For record and consideration	n/a
6	23	In response to YR's inquiry of the mid-block crossings previously identified for the Highway 400 North Employment areas, City staff noted that although current studies have a midblock crossing proposed in Block 35, any decisions on this crossing location depend on the status of the GTA West. This study recommends a minimum of one midblock crossing in the area of Blocks 34 and 35.	For Information	n/a
7	26	MNRF requested that an additional alternative be analyzed. Alternative 4 would have all the recommendations of Alternative 3 with the exception of the construction of the Teston Road and Kirby Road missing links.	HDR to provide analysis for Alternative 4	To be completed for PIC #2
8	29	MNRF questioned whether the categories were equally weighted. With reference to slide 29, HDR replied that they will provide the detailed evaluation as based on criterial on slide 18.	HDR to provide details on evaluation	To be completed week of March 13
9	29	MNRF expressed concerns about the inclusion of the missing links in Alternatives 2 and 3. The two crossings are located within the ORMCP which gives heightened protection to the environment. Crossings through the corridor would be assessed in more details through future Environmental Assessment process. NVNCTMP provides the needs and justification for the linkages, satisfying Phase 1 & 2 of the EA process	HDR to include Alternative 4	To be completed for PIC #2
10	29	YR commented that the City cannot rely on the improvements of the Regional Road network to accommodate growth – the City needs to provide a finer grid network to accommodate growth.	For record and consideration	n/a
11	30	YR noted that Pine Valley Drive was resurfaced	For record and	n/a

Item No.	*Presentation Slide Ref.*	*Topic*	*Action Item*	*Status / Timing*
		approximately three years ago. HDR commented that in the Study Area, Pine Valley Drive is a local road and may require reconstruction to accommodate growth	consideration	
12	32	City of Vaughan emphasized the external connections to the finer grid network of Block 27. Their policy calls for a minimum of two north-south and east-west connections within a block.	n/a	n/a
13	32	Metrolinx commented that the Kirby Road grade separation was not identified as a priority at this time. The City of Vaughan mentioned that their conducted their own analysis of the Kirby Road grade separation.	City of Vaughan to provide Metrolinx a memo of the Kirby Road Grade Separation Analysis	Submitted Draft Technical Memo to Mx on Mar 15.
14	33	MNRF noted that the pathway connection within Block 41 to Pine Valley Drive would cross a regulated habitat area.	n/a	n/a
15	37	Metrolinx commented that they are focusing on general multi-modal stage access for Kirby GO Station. The EcoMobility Hub has policy attached to this that is currently unavailable, including bike share. There are also vendor issues and partnership issues that could arise.	HDR to include multi-modal hub access to Kirby GO	To be included in Final Report
16	-	MNRF noted that they have previously talked to YR about several TMP projects and have ranked them from low to high risk. Several projects included in the Alternatives 2 and 3 fall under the high-risk ranking due to environmentally sensitive areas and species at risk.	MNRF to provide letters with details about previous discussion with YR from the YR TMP	To receive week of March 13
17	-	TRCA would like to see details about Travel Demand Management (TDM)	HDR to provide details on TDM	To be included in Final Report
18	-	City of Vaughan requested that comments on the presentation are to be submitted within two weeks	All parties	Wednesday, March 24th, 2017

Chai, Jonathan

From: June Little <june.little@trca.on.ca>
Sent: April-05-17 12:29 PM
To: Lai, Winnie
Cc: 'adrian.firmani@ontario.ca'; 'Adrian.Kawun@york.ca'; 'ahsun.lee@richmondhill.ca'; Pearce, Andrew; Hassakourians, Armine; 'Augustine.Ko@york.ca'; Rathod, Bhakti; Curak, Catherine; Wolnik, Chris; Dana Anderson; 'Dan.DellaMora@ontario.ca'; Kowpak, Dorothy; Darlene Presley; Gilchrist, Gabrielle (MNRF); 'DeRose, Graham (MTO)'; 'Greg.Lunn@ontario.ca'; 'jackie.burkart@ontario.ca'; 'jlittle@trca.on.ca'; Chai, Jonathan; 'kbrar@smartcommutentv.ca'; 'lbates@smartcommutentv.ca'; 'Margaret.Mikolajczak@ontario.ca'; Chung, Margie; Jawaid, Maria (MNRF); Heaton, Mark (MNRF); Roias, Marta; Tavares, Martin; 'mcole@king.ca'; 'megan.eplett@ontario.ca'; Shapiera, Melanie (MNRF); Frieri, Michael; Habib, Michael; Nadine Navarro; 'Naren Garg'; John, Praveen (praveen.john@york.ca); Richard Borbridge; 'Richard.Hui@york.ca'; 'rina.kulathinal@ontario.ca'; Bayley, Rob; McQuillin, Roy; 'Cameron, Sarah'; Hubjer, Selma; 'Shawn.Smith@york.ca'; 'sslaymaker@smartcommutentv.ca'; 'steven.strong@ontario.ca'; 'Steve.Mota@york.ca'; Iacobelli, Tony; 'transcanada@lehmanplan.ca'; Gan, Tyrone; 'Bui, Vi'; Postic, Zoran
Subject: Re: North Vaughan and New Communities Transportation Master Plan TAC meeting #2 DRAFT MINUTES

Hi Winnie,

Given that we received the presentation materials on March 20th, TRCA will follow the two week provided and will be provide comments by April 13th.

I don't have a copy of the work program for this project. Is there to be an opportunity to comment on the whole study or are we just commenting on the summary information?

Thanks,

June Little, RPP
Senior Manager, Planning Development & Regulation, York West
Toronto and Region Conservation Authority, Location & Courier Address: 101 Exchange Avenue Vaughan, ON
Mailing Address: 5 Shoreham Road, Downsview, ON M3N 1S4
T: 416-661-6600, ext. 5756 F: 416-661-6898 E: jlittle@trca.on.ca

From: "Lai, Winnie" <Winnie.Lai@vaughan.ca>
To: "Hubjer, Selma" <Selma.Hubjer@vaughan.ca>, "Pearce, Andrew" <Andrew.Pearce@vaughan.ca>, "McQuillin, Roy" <ROY.MCQUILLIN@vaughan.ca>, "Hassakourians, Armine" <Armine.Hassakourians@vaughan.ca>, "'Augustine.Ko@york.ca'" <Augustine.Ko@york.ca>, "'Cameron, Sarah'" <sarah.cameron@york.ca>, "'Richard.Hui@york.ca'" <Richard.Hui@york.ca>, "'Steve.Mota@york.ca'" <Steve.Mota@york.ca>, "'Shawn.Smith@york.ca'" <Shawn.Smith@york.ca>, "'Bui, Vi'" <Vi.Bui@york.ca>, "'Adrian.Kawun@york.ca'" <Adrian.Kawun@york.ca>, "Iacobelli, Tony" <Tony.Iacobelli@vaughan.ca>, "Frieri, Michael" <Michael.Frieri@vaughan.ca>, "Bayley, Rob" <Rob.Bayley@vaughan.ca>, "Wolnik, Chris" <Chris.Wolnik@vaughan.ca>, "Tavares, Martin" <Martin.Tavares@vaughan.ca>, "Habib, Michael" <Michael.Habib@vaughan.ca>, Nadine Navarro <Nadine.Navarro@metrolinx.com>, "'Greg.Lunn@ontario.ca'" <Greg.Lunn@ontario.ca>, "'Margaret.Mikolajczak@ontario.ca'" <Margaret.Mikolajczak@ontario.ca>, "'Dan.DellaMora@ontario.ca'" <Dan.DellaMora@ontario.ca>, "'mcole@king.ca'" <mcole@king.ca>, "Roias, Marta" <Marta.Roias@vaughan.ca>, "'ahsun.lee@richmondhill.ca'" <ahsun.lee@richmondhill.ca>, "'transcanada@lehmanplan.ca'" <transcanada@lehmanplan.ca>, "'Gan, Tyrone'" <Tyrone.Gan@hdrinc.com>, "'Chai, Jonathan'" <Jonathan.Chai@hdrinc.com>, "'Naren Garg'" <Naren.Garg@metrolinx.com>, Richard Borbridge <Richard.Borbridge@metrolinx.com>, "'jlittle@trca.on.ca'" <jlittle@trca.on.ca>, "'jackie.burkart@ontario.ca'" <jackie.burkart@ontario.ca>, "'megan.eplett@ontario.ca'" <megan.eplett@ontario.ca>, "'kbrar@smartcommutentv.ca'" <kbrar@smartcommutentv.ca>, "'sslaymaker@smartcommutentv.ca'" <sslaymaker@smartcommutentv.ca>, "Postic, Zoran" <Zoran.Postic@vaughan.ca>, "Chung, Margie" <Margie.Chung@vaughan.ca>, "Kowpak, Dorothy" <Dorothy.Kowpak@vaughan.ca>
Cc: Darlene Presley <dpresley@mhbcplan.com>, "Heaton, Mark (MNRF)" <mark.heaton@ontario.ca>, "'lbates@smartcommutentv.ca'" <lbates@smartcommutentv.ca>, "Shapiera, Melanie (MNRF)" <melanie.shapiera@ontario.ca>, "'steven.strong@ontario.ca'" <steven.strong@ontario.ca>, "Gilchrist, Gabrielle (MNRF)" <Gabrielle.Gilchrist@ontario.ca>, "'DeRose, Graham (MTO)'" <Graham.DeRose@ontario.ca>, "'rina.kulathinal@ontario.ca'" <rina.kulathinal@ontario.ca>, "'adrian.firmani@ontario.ca'" <adrian.firmani@ontario.ca>, Dana Anderson <danderson@mhbcplan.com>, "Curak, Catherine"

<Catherine.Curak@hdrinc.com>, "Rathod, Bhakti" <Bhakti.Rathod@york.ca>, "John, Praveen (praveen.john@york.ca)" <praveen.john@york.ca>, "Jawaid, Maria (MNRF)" <Maria.Jawaid@ontario.ca>
Date: 03/20/2017 12:06 PM
Subject: North Vaughan and New Communities Transportation Master Plan TAC meeting #2 DRAFT MINUTES

Thank you all for attending the TAC meeting on March 10th for the NVNCTMP and provided valuable input to the project team.
Please find attached the DRAFT minutes and presentation material.

Please let me know if you have any comment to the minutes by end of this week.

Thank you.

Regards,

Winnie Lai P.Eng.
Transportation Project Manager/ Engineer
905-832-8585, ext. 8192 | winnie.lai@vaughan.ca

City of Vaughan I Development Engineering and Infrastructure Planning
2141 Major Mackenzie Dr., Vaughan, ON L6A 1T1
vaughan.ca

[attachment "2017-03-02_NVNCTMP_TAC.pdf" deleted by June Little/TRCA] [attachment "NVNCTMP_TAC2Minutes_DRAFT.pdf" deleted by June Little/TRCA]

Chai, Jonathan

From: Scott Smith <ssmith@trca.on.ca>
Sent: April-20-17 9:43 AM
To: winnie.lai@vaughan.ca
Cc: Chai, Jonathan
Subject: CFN 57560 - North Vaughan TMP - draft letter
Attachments: 57560 - TAC 2 materials response - draft.pdf

Winnie,

As discussed, please find attached the draft letter. Please review and we'll discuss in a meeting prior to my signing the letter.

Here are some blocks of time that we are tentatively available. Lets book 1.5 hours. I've noted where we have rooms available here for the meeting. My preference would be to have the meeting here. All our rooms have screens.

Thursday April 27 - afternoon - Vaughan offices
Mon May 1: 2-4pm - TRCA offices
Wed May 3 - afternoon - TRCA offices
Friday May 5 - afternoon - Vaughan offices

thank you,

Scott Smith, RPP, MCIP | Planner II, Environmental Assessment Planning | Planning and Development |Toronto and Region Conservation | Meeting and Courier Address: 101 Exchange Avenue | Concord, ON | L4K 5R6 | Mailing Address: 5 Shoreham Drive | Toronto, ON | M3N 1S4 |☎416-661-6600 ext. 5758 | ✉ssmith@trca.on.ca |www.trca.on.ca |

April 20, 2017 CFN 57560

BY E-MAIL ONLY (Winnie.Lai@vaughan.ca)

Ms. Winnie Lai
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, Ontario
L6A 1T1

Dear Ms. Lai:

Re: Response to Technical Advisory Committee 2 Presentation and Memorandum
North Vaughan and New Communities Transportation Master Plan
Municipal Class Environmental Assessment – Master Plan
Humber & Don Watersheds; City of Vaughan; Regional Municipality of York

Toronto and Region Conservation Authority (TRCA) staff received the presentation for the second Technical Advisory Committee (TAC) meeting and a Memorandum on the Evaluation Criteria and Weighting Methodology. Staff understands the purpose of this Transportation Master Plan (TMP) to be an analysis of transportation needs in north Vaughan to 2031 based primarily upon the population projections for Blocks 27 and 41. However, given the majority of the roads examined are under the jurisdiction of the Regional Municipality of York, that the Regional Municipality of York concluded a comprehensive TMP of the Region in late 2016, that the population and employment numbers used in this master plan were taken from the Region's TMP, and that this Master Plan does not examine any of the new roads proposed in the block plans, the value of this purpose is unclear.

The meeting minutes state in item 9 that this TMP "provides the needs and justification for the linkages, satisfying Phase 1 & 2 of the EA process." The York Region 2016 TMP satisfies phases 1 and 2 for all projects, *with the exception* of the unopened road allowances and new crossings of the natural heritage system. Authority Resolution A65/16 states that "the draft 2016 TMP be revised to specify that all new crossings of the NHS, including Teston Road between Keele and Dufferin Street, as well as Kirby Road between Bathurst Street and Dufferin Street, and 15th Sideroad between Keele Street and Highway 400, given that they are uploaded from the local municipality to York Region for study, each be required to undertake environmental assessments that include a detailed network study to support an analysis of the need for the project and an analysis of alternative solutions". In response to Authority Resolution A65/16, the final York Region 2016 TMP states in Section 9.3.5 that "all new crossings of the Natural Heritage System, including Teston Road between Keele and Dufferin Street, Kirby Road between Bathurst Street and Dufferin Street and 15th Sideroad between Keele Street and Highway 400, will undertake environmental assessments. These assessments will include a detailed network analysis to support the need for the project and an analysis of alternative solutions (i.e., revisit Phases 1 and 2 of the MEA Class EA process at the project specific EA phase), subject to the transfer of road jurisdiction from the local municipality to the Region, where applicable."

It is the position of TRCA through an Authority Resolution, as supported by the York Region 2016 TMP, that a TMP is not sufficient to satisfy Phases 1 and 2 of the MCEA process for the Kirby Road or Teston Road unopened road allowances. TRCA staff may seek an updated Authority Resolution specific to this TMP upon review of responses to TRCA's comments and revised documentation. This TMP can still be a useful input into the Kirby Road unopened road allowance EA, and TRCA staff has a number of recommendations in Appendix A to strengthen the analysis. It is inappropriate and unnecessary for this TMP to examine the needs and justification for the Teston Road unopened road allowance because a separate Individual Environmental Assessment will be undertaken by York Region that will examine the needs and justification in detail supported by a network analysis.

TRCA staff is concerned that the improvements to Kirby Road west of Weston Road may be premised upon a future connection of the unopened road allowance between Huntington Road and Highway 27. This connection would have significant impacts to the form and function of the natural heritage system of the main Humber River Valley and TRCA's Nashville lands.

TRCA staff has a number of significant additional concerns that are provided in detail in Appendix A. TRCA staff recommends a meeting to discuss further the concerns of TRCA staff. Furthermore, it is in the best interests of Vaughan to provide TRCA with the revised alternatives analysis and a revised Memo on the Evaluation Criteria and Weighting Methodology based upon TRCA's comments, as this will facilitate an earlier resolution of issues prior to the drafting of the final document. TRCA staff requires at least 6 weeks to review the draft TMP document.

In order to facilitate the review of the next submission please provide the following:

- Two copies of the cover letter with Central File Number (CFN) 57560 quoted, which outlines how the comment above has been addressed;
- Two copies of the revised memo and plans;
- Review fee of $12,130. Please contact the undersigned if you require an invoice.
- A digital copy of all submitted material.

Should you have any questions please contact me at extension 5758 or at ssmith@trca.on.ca.

Yours truly,

Scott Smith, RPP, MCIP
Planner II, Environmental Assessment Planning
Planning and Development

BY E-MAIL

cc: HDR: Jonathan Chai (jonathan.chai@hdrinc.com)
MNRF: Steven Strong (steven.strong@ontario.ca)
York: Steve Mota (steve.mota@york.ca)
Praveen John (Praveen.john@york.ca)
TRCA: Carolyn Woodland, Senior Director, Planning, Greenspace and Communications
Beth Williston, Associate Director, Environmental Assessment Planning
Suzanne Bevan, Senior Planner, Environmental Assessment Planning
June Little, Senior Manager, Development, Planning and Regulations
Coreena Smith, Senior Planner, Development, Planning and Regulations
Jackie Burkart, Senior Planner, Development, Planning and Regulations
Sonia Dhir, Project Manager, Humber Watershed

Arlen Leeming, Project Manager, Don Watershed

Appendix A

#	TRCA Comments (April 13, 2017)	Consultant Response
General Comments		
1.	This project deals with some significant issues where TRCA has strong interests. While not a requirement of the MCEA process, it is standard best practice and in the best interests of the City of Vaughan that TRCA be afforded an opportunity to review the draft document. TRCA staff requests that at least 6 weeks be scheduled for TRCA review of the draft ESR.	
2.	York Region completed its TMP in late 2016. The study purpose and scope of the North Vaughan and New Communities TMP are unclear with respect to why the study re-examines improvements to Regional roads. a. Please clarify how this study relates to the York Region 2016 TMP. b. Please clarify how the data or analysis differs from the York Region 2016 TMP, such as the population and employment projections. c. Please clarify the purpose of focusing the alternatives analysis on Regional roads. d. Please ensure the above are clearly explained in the TMP document.	
3.	TRCA staff finds it inappropriate for the City of Vaughan to be recommending any revisions to Regional roads. It is the opinion of TRCA staff that to be most relevant and valuable this study should take the Region's 2016 TMP as the 'base case' and focus on roads under its own jurisdiction for the alternatives analysis. Please consider.	
4.	The York Region 2016 TMP completes phases 1 and 2 for all projects, with the exception of the unopened road allowances and new crossings of the natural heritage system. Authority Resolution A65/16 states that "the draft 2016 TMP be revised to specify that all new crossings of the NHS, including Teston Road between Keele and Dufferin Street, as well as Kirby Road between Bathurst Street and Dufferin Street, and 15th Sideroad between Keele Street and Highway 400, given that they are uploaded from the local municipality to York Region for study, each be required to undertake environmental assessments that include a detailed network study to support an analysis of the need for the project and an analysis of alternative solutions". In response to Authority Resolution A65/16, the final 2016 TMP included in Section 9.3.5 that "all new crossings of the Natural Heritage System, including Teston Road between Keele and Dufferin Street, Kirby Road between Bathurst Street and Dufferin Street and 15th Sideroad between Keele Street and Highway 400, will undertake environmental assessments. These assessments will include a detailed network analysis to support the need for the project and an analysis of alternative solutions (i.e., revisit Phases 1 and 2 of the MEA Class EA process at the project specific EA phase), subject to the transfer of road jurisdiction from the local municipality to the Region, where applicable." a. While it is appropriate for the traffic analysis to assume the Teston Road unopened road allowance is connected, please ensure that all maps showing the Teston Road connection note that it is subject to a separate IEA. Furthermore, please ensure that the text of the final document quotes	

	Section 9.3.5 of the York Region 2016 TMP. b. Kirby Road is under the jurisdiction of the City of Vaughan; however, similar to the Teston Road unopened road allowance, it is the position of the TRCA Authority that the unopened road allowance should be studied separately under a full EA and network study. It is not appropriate for a TMP to satisfy phases 1 and 2 of the MCEA for an unopened road allowance. A TMP is an inappropriate process to sufficiently complete phases 1 and 2 for new crossings of the natural heritage system, due to the potential for significant impacts that to the form and function of the natural heritage system. A separate MCEA starting at phase 1, or ideally an IEA, should be completed for Kirby Road. Please ensure that the final document notes on all maps that the Kirby Road unopened road allowance is subject to a separate EA process. Please add wording to the final ESR that the EA for Kirby will be either an IEA or a Schedule C MCEA starting at Phase 1, including a network analysis. c. TRCA staff does support the Kirby Road unopened road allowance EA in incorporating the analysis from this TMP into their EA, and re-examining the analysis with a further level of detail regarding natural heritage impacts. The Kirby Road unopened road allowance EA will need to expand the traffic analysis to east of Bathurst Street. d. Either this TMP or the Kirby Road unopened road allowance EA should examine the traffic implications east of Bathurst Street with and without the link. e. Please confirm that the V/C analysis assumes that the jogs of Jefferson Sideroad at Yonge Street and at Bathurst Street are removed. f. As this study reviews the need for the Kirby Road unopened allowance TRCA staff may be preparing an Authority report. The report would be prepared upon review of the revised documentation.	
5.	While the NVNC TMP uses the Block 41, 34 and 27 population and employment projects to drive the user demand on the arterial road system, it does not appear the any collector roads were examined. This TMP is the appropriate time to examine collector roads within these blocks and study them as part of the larger network and address cumulative impacts on the natural heritage system. Please consider expanding the alternatives analysis to consider local collector roads.	
6.	Please note that the City of Vaughan has approached TRCA staff regarding a potential opportunity to partner with Golf Canada in the vicinity of the former Keele landfill lands. Please confirm whether this potential proposal has any implications for this TMP.	
TAC materials		
7.	Page 31: TRCA staff notes that “road improvements” are identified for Kirby Road from Islington to Weston Road. a. Please clarify what road improvements are proposed. b. Please clarify whether “road improvements” are being driven by anticipated road capacity constraints. Please provide the V/C analysis for Kirby Road. c. As large parts areas north west of Teston Road and Pine Valley Drive are designated as Protected Countryside under the Greenbelt, it is unclear the need to increase capacity of Kirby Road from Islington to Pine Valley Drive.	

	d. The Key Issues Summary Map from the Stakeholder workshop held August 19, 2015 identifies a potential future extension of Kirby Road west of Highway 27. Based on the TAC 2 materials, TRCA staff are concerned that any improvements to Kirby Road from Islington Avenue to Weston Road not either be dependent on or lead to a desire to connect Kirby Road between Islington Avenue and Huntington Road. TRCA staff notes that this Kirby unopened road allowance is through very high quality habitat with a steep valley and through which the main Humber meanders. Any crossing would also impact and require TRCA property. TRCA staff may be seeking an Authority resolution on the unopened road allowance of Kirby Road between Huntington Road and Highway 27. e. There is currently a jog at Kirby Road and Pine Valley Drive. There is a PSW at northwest of the jog and a woodland and potential wetland to the southeast of the jog. The elimination of the jog has the potential to result in significant impacts to one or both of these two features and requires detailed analysis to confirm the need and justification. Please clarify whether the TMP is proposing to remove the jog at Kirby Road and Pine Valley Drive. f. Kirby Road between Weston Road and Islington Avenue crosses and is adjacent to many sensitive features. Please note that any future EA should follow TRCA's Crossings Guideline which provides a framework for the design of road crossings of valley and stream features.	
8.	Pages 10, 15, 19, 23 and 31 show maps with the protected GTA West corridor. It is the position of TRCA staff that this protected corridor is tied directly to the Province's EA and that should the Province not proceed with the GTA West highway, the lands be released. Please add language to this effect in the TMP document.	
9.	It appears that the additional widening of Jane Street between Teston and Kirby for Alternative #3 results in a bottlenecking of traffic on Jane Street between Major Mackenzie Drive and Teston Road. It is unclear that the Jane Street V/C ration in Alternative #3 is preferable to Alternative #2. If this alternative is kept, please provide a clear rationale in the final document for the preference of #3 over #2.	
10.	Alternative #2 shows Bathurst Street approach capacity between Teston and Kirby by 2031. Alternative #3 no longer shows Bathurst Street approaching capacity between Teston and Kirby by 2031. As the only relevant difference between alternatives # 2 and #3 appears to be the added widening of Jane between Teston and Kirby, it is unclear how the Bathurst Street V/C ratio was reduced. If this alternative is kept, please confirm and clarify in the final document.	
Memo: Evaluation Criteria and Weighting Methodology		
11.	Criteria: community impact. It is unclear why the metric for community impact is to reduce traffic on local streets. This appears to conflict with the desire for a finer grained collector road system, which improves the efficiency of traffic flow. It is inappropriate for the City of Vaughan to rely on only the Regional arterial road system for traffic flow.	

12.	TRCA staff reiterates their position that the analysis should be re-done to remove any recommendations on Regional roads that differs from the York Region 2016 TMP.	
13.	Active Transportation, alternative 4, notes that the removal of the mid-block crossings reduces connectivity of the Regional active transportation network. It is the opinion of TRCA staff that because an active trail connection could be created at a fraction of the cost and impact along both unopened road allowances, it is therefore a false premise that removing the missing links prevents an active transportation connection. A fulsome alternatives analysis should include an additional alternative of an active transportation only connection between the unopened road allowances.	
14.	Mobility Connectivity Criteria, alternative 3, notes that it adds an alternative crossing of Highway 400 to Teston and Kirby. TRCA staff note that in the absence of the GTA West highway and the local collector roads and network north of Kirby, it is unclear how this additional crossing was modelled. Please clarify the modelling and justification that this mid-block crossing will be required by 2031.	
15.	Surface and Groundwater – please clarify whether the impacts examined are water quantity and quality, and revise the document as necessary.	
16.	Natural Heritage Impacts & Surface/Groundwater impacts – new crossings of the natural heritage system require a far more detailed analysis of existing conditions to fulfil phase 2 requirements of the MCEA process. This level of detail is appropriate for widening and reconstructing existing roads.	
17.	None of the alternatives examined in the memo includes the reconstruction of Kirby Road west of Weston road, and Pine Valley Drive north of Teston. As the other improvements are either proposed already in the York Region 2016 TMP, outside Vaughan's jurisdiction, or subject to separate EAs with network studies, the most important alternatives to analyze are these sections of Kirby and Pine Valley.	
18.	Alternative 4: As Teston Road is being undertaken as a separate IEA with a network analysis, TRCA staff recommends assuming the connection in the analysis with the caveat that it is subject to an IEA, and removing it from consideration here and focus on Kirby Road, which is under Vaughan's jurisdiction.	
19.	Alternative 3: please add only roads that are under Vaughan's jurisdiction and not already planned for widening in the York Region 2016 TMP. Please include Pine Valley north of Teston, Kirby west of Weston Road, and any proposed Vaughan collector roads.	
20.	Community Impacts, Alternative 4. It is unclear how not adding the Teston and Kirby road missing links results in greater traffic on local residential streets because there are not any local road alternatives currently. Please clarify the local roads that would receive higher volumes.	

Climate Change		
21.	TRCA staff finds the climate change impacts criteria in the memo to be completely insufficient and with inappropriate metrics. Air quality is not a metric for climate change mitigation. Climate change and air pollution are predominantly separate issues. Tailpipe emissions such as methane and CO2 are not emitted in sufficient quantities to impact air quality. Conversely, air quality is determined through a combination of various tailpipe emissions, including nitrous oxides (NO and NO2), volatile organic compounds (VOCs), ozone, particulate matter and carbon monoxide (CO). While both issues share mitigation measures that generally reduce tailpipe emissions the relative importance of mitigation versus adaptation measures is different. Climate change is a transboundary issue where the City's impacts on CO2 emissions are far too small on their own to have any impact, so adaptation is very important. By contrast, air pollution impacts are very localized, so mitigation measures can improve local air quality. TRCA staff recommends a separate Air Quality criteria with metrics related to tailpipe emissions. Consider adding the criteria under the Socio-economic Environment category due to the significant potential localized impacts on human health and well-being.	
22.	In the memo, TRCA staff finds that using a metric of 'reducing congestion' for the criteria of Climate Change to be inappropriate. The premise of using this metric is presumed to be that adding a new road will reduce vehicular congestion, which will reduce idling, which reduces carbon emissions, which contributes to the mitigation of climate change. There are multiple issues with this logical progression. a. First, research shows that a reduction in congestion has a temporary impact as it alters the cost-benefit calculus of car ownership and car use. b. Second, climate change is a transboundary scale issue. Regardless of any reduction in congestion, the impact will be localized. Vehicles will simple move quicker to the next choke point in their route. On a regional scale it is unclear such a localized reduction in congestion would have any meaningful impact on the reduction in carbon emissions. c. Third, the argument implies that widening roads and adding new roads is a net benefit to climate change mitigation. Climate change is a multi-faceted issue that affects most criteria. To only use this one metric greatly weakens the overall analysis and opens up the study and its conclusions to strong public criticism.	
23.	Climate change is a multi-disciplinary, multi-faceted set of issues. TRCA staff is of the opinion that Climate Change should be managed either as a separate category with criteria that reflect socio-economic and natural environment issues and metrics, or that climate change metrics be integrated into other criteria. It is inappropriate for climate change to have a single criterion under the Natural Environment category. Furthermore, Climate Change criteria and the associate metrics should clearly identify whether the criterion or metric is regarding mitigation or adaptation.	

	MOECC posted a draft guide last fall called “Consideration of Climate Change in Environmental Assessments in Ontario” that may be of assistance. As of the writing of this letter, the guide is still available on the EBR. In the absence of a final guide, please refer to the draft.	

April 20, 2017 CFN 57560

BY E-MAIL ONLY (Winnie.Lai@vaughan.ca)

Ms. Winnie Lai
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, Ontario
L6A 1T1

Dear Ms. Lai:

Re: Response to Technical Advisory Committee 2 Presentation and Memorandum
North Vaughan and New Communities Transportation Master Plan
Municipal Class Environmental Assessment – Master Plan
Humber & Don Watersheds; City of Vaughan; Regional Municipality of York

Toronto and Region Conservation Authority (TRCA) staff received the presentation for the second Technical Advisory Committee (TAC) meeting and a Memorandum on the Evaluation Criteria and Weighting Methodology. Staff understands the purpose of this Transportation Master Plan (TMP) to be an analysis of transportation needs in north Vaughan to 2031 based primarily upon the population projections for Blocks 27 and 41. However, given the majority of the roads examined are under the jurisdiction of the Regional Municipality of York, that the Regional Municipality of York concluded a comprehensive TMP of the Region in late 2016, that the population and employment numbers used in this master plan were taken from the Region's TMP, and that this Master Plan does not examine any of the new roads proposed in the block plans, the value of this purpose is unclear.

The meeting minutes state in item 9 that this TMP "provides the needs and justification for the linkages, satisfying Phase 1 & 2 of the EA process." The York Region 2016 TMP satisfies phases 1 and 2 for all projects, *with the exception* of the unopened road allowances and new crossings of the natural heritage system. Authority Resolution A65/16 states that "the draft 2016 TMP be revised to specify that all new crossings of the NHS, including Teston Road between Keele and Dufferin Street, as well as Kirby Road between Bathurst Street and Dufferin Street, and 15th Sideroad between Keele Street and Highway 400, given that they are uploaded from the local municipality to York Region for study, each be required to undertake environmental assessments that include a detailed network study to support an analysis of the need for the project and an analysis of alternative solutions". In response to Authority Resolution A65/16, the final York Region 2016 TMP states in Section 9.3.5 that "all new crossings of the Natural Heritage System, including Teston Road between Keele and Dufferin Street, Kirby Road between Bathurst Street and Dufferin Street and 15th Sideroad between Keele Street and Highway 400, will undertake environmental assessments. These assessments will include a detailed network analysis to support the need for the project and an analysis of alternative solutions (i.e., revisit Phases 1 and 2 of the MEA Class EA process at the project specific EA phase), subject to the transfer of road jurisdiction from the local municipality to the Region, where applicable."

It is the position of TRCA through an Authority Resolution, as supported by the York Region 2016 TMP, that a TMP is not sufficient to satisfy Phases 1 and 2 of the MCEA process for the Kirby Road or Teston Road unopened road allowances. TRCA staff may seek an updated Authority Resolution specific to this TMP upon review of responses to TRCA's comments and revised documentation. This TMP can still be a useful input into the Kirby Road unopened road allowance EA, and TRCA staff has a number of recommendations in Appendix A to strengthen the analysis. It is inappropriate and unnecessary for this TMP to examine the needs and justification for the Teston Road unopened road allowance because a separate Individual Environmental Assessment will be undertaken by York Region that will examine the needs and justification in detail supported by a network analysis.

TRCA staff is concerned that the improvements to Kirby Road west of Weston Road may be premised upon a future connection of the unopened road allowance between Huntington Road and Highway 27. This connection would have significant impacts to the form and function of the natural heritage system of the main Humber River Valley and TRCA's Nashville lands.

TRCA staff has a number of significant additional concerns that are provided in detail in Appendix A. TRCA staff recommends a meeting to discuss further the concerns of TRCA staff. Furthermore, it is in the best interests of Vaughan to provide TRCA with the revised alternatives analysis and a revised Memo on the Evaluation Criteria and Weighting Methodology based upon TRCA's comments, as this will facilitate an earlier resolution of issues prior to the drafting of the final document. TRCA staff requires at least 6 weeks to review the draft TMP document.

In order to facilitate the review of the next submission please provide the following:

- Two copies of the cover letter with Central File Number (CFN) 57560 quoted, which outlines how the comment above has been addressed;
- Two copies of the revised memo and plans;
- Review fee of $12,130. Please contact the undersigned if you require an invoice.
- A digital copy of all submitted material.

Should you have any questions please contact me at extension 5758 or at ssmith@trca.on.ca.

Yours truly,

Scott Smith, RPP, MCIP
Planner II, Environmental Assessment Planning
Planning and Development

BY E-MAIL

cc: HDR: Jonathan Chai (jonathan.chai@hdrinc.com)
MNRF: Steven Strong (steven.strong@ontario.ca)
York: Steve Mota (steve.mota@york.ca)
Praveen John (Praveen.john@york.ca)
TRCA: Carolyn Woodland, Senior Director, Planning, Greenspace and Communications
Beth Williston, Associate Director, Environmental Assessment Planning
Suzanne Bevan, Senior Planner, Environmental Assessment Planning
June Little, Senior Manager, Development, Planning and Regulations
Coreena Smith, Senior Planner, Development, Planning and Regulations
Jackie Burkart, Senior Planner, Development, Planning and Regulations
Sonia Dhir, Project Manager, Humber Watershed

Arlen Leeming, Project Manager, Don Watershed

Appendix A

#	TRCA Comments (April 13, 2017)	Consultant Response
General Comments		
1.	This project deals with some significant issues where TRCA has strong interests. While not a requirement of the MCEA process, it is standard best practice and in the best interests of the City of Vaughan that TRCA be afforded an opportunity to review the draft document. TRCA staff requests that at least 6 weeks be scheduled for TRCA review of the draft ESR.	
2.	York Region completed its TMP in late 2016. The study purpose and scope of the North Vaughan and New Communities TMP are unclear with respect to why the study re-examines improvements to Regional roads. a. Please clarify how this study relates to the York Region 2016 TMP. b. Please clarify how the data or analysis differs from the York Region 2016 TMP, such as the population and employment projections. c. Please clarify the purpose of focusing the alternatives analysis on Regional roads. d. Please ensure the above are clearly explained in the TMP document.	
3.	TRCA staff finds it inappropriate for the City of Vaughan to be recommending any revisions to Regional roads. It is the opinion of TRCA staff that to be most relevant and valuable this study should take the Region's 2016 TMP as the 'base case' and focus on roads under its own jurisdiction for the alternatives analysis. Please consider.	
4.	The York Region 2016 TMP completes phases 1 and 2 for all projects, with the exception of the unopened road allowances and new crossings of the natural heritage system. Authority Resolution A65/16 states that "the draft 2016 TMP be revised to specify that all new crossings of the NHS, including Teston Road between Keele and Dufferin Street, as well as Kirby Road between Bathurst Street and Dufferin Street, and 15th Sideroad between Keele Street and Highway 400, given that they are uploaded from the local municipality to York Region for study, each be required to undertake environmental assessments that include a detailed network study to support an analysis of the need for the project and an analysis of alternative solutions". In response to Authority Resolution A65/16, the final 2016 TMP included in Section 9.3.5 that "all new crossings of the Natural Heritage System, including Teston Road between Keele and Dufferin Street, Kirby Road between Bathurst Street and Dufferin Street and 15th Sideroad between Keele Street and Highway 400, will undertake environmental assessments. These assessments will include a detailed network analysis to support the need for the project and an analysis of alternative solutions (i.e., revisit Phases 1 and 2 of the MEA Class EA process at the project specific EA phase), subject to the transfer of road jurisdiction from the local municipality to the Region, where applicable." a. While it is appropriate for the traffic analysis to assume the Teston Road unopened road allowance is connected, please ensure that all maps showing the Teston Road connection note that it is subject to a separate IEA. Furthermore, please ensure that the text of the final document quotes	

	Section 9.3.5 of the York Region 2016 TMP. b. Kirby Road is under the jurisdiction of the City of Vaughan; however, similar to the Teston Road unopened road allowance, it is the position of the TRCA Authority that the unopened road allowance should be studied separately under a full EA and network study. It is not appropriate for a TMP to satisfy phases 1 and 2 of the MCEA for an unopened road allowance. A TMP is an inappropriate process to sufficiently complete phases 1 and 2 for new crossings of the natural heritage system, due to the potential for significant impacts that to the form and function of the natural heritage system. A separate MCEA starting at phase 1, or ideally an IEA, should be completed for Kirby Road. Please ensure that the final document notes on all maps that the Kirby Road unopened road allowance is subject to a separate EA process. Please add wording to the final ESR that the EA for Kirby will be either an IEA or a Schedule C MCEA starting at Phase 1, including a network analysis. c. TRCA staff does support the Kirby Road unopened road allowance EA in incorporating the analysis from this TMP into their EA, and re-examining the analysis with a further level of detail regarding natural heritage impacts. The Kirby Road unopened road allowance EA will need to expand the traffic analysis to east of Bathurst Street. d. Either this TMP or the Kirby Road unopened road allowance EA should examine the traffic implications east of Bathurst Street with and without the link. e. Please confirm that the V/C analysis assumes that the jogs of Jefferson Sideroad at Yonge Street and at Bathurst Street are removed. f. As this study reviews the need for the Kirby Road unopened allowance TRCA staff may be preparing an Authority report. The report would be prepared upon review of the revised documentation.	
5.	While the NVNC TMP uses the Block 41, 34 and 27 population and employment projects to drive the user demand on the arterial road system, it does not appear the any collector roads were examined. This TMP is the appropriate time to examine collector roads within these blocks and study them as part of the larger network and address cumulative impacts on the natural heritage system. Please consider expanding the alternatives analysis to consider local collector roads.	
6.	Please note that the City of Vaughan has approached TRCA staff regarding a potential opportunity to partner with Golf Canada in the vicinity of the former Keele landfill lands. Please confirm whether this potential proposal has any implications for this TMP.	
TAC materials		
7.	Page 31: TRCA staff notes that “road improvements” are identified for Kirby Road from Islington to Weston Road. a. Please clarify what road improvements are proposed. b. Please clarify whether “road improvements” are being driven by anticipated road capacity constraints. Please provide the V/C analysis for Kirby Road. c. As large parts areas north west of Teston Road and Pine Valley Drive are designated as Protected Countryside under the Greenbelt, it is unclear the need to increase capacity of Kirby Road from Islington to Pine Valley Drive.	

	d. The Key Issues Summary Map from the Stakeholder workshop held August 19, 2015 identifies a potential future extension of Kirby Road west of Highway 27. Based on the TAC 2 materials, TRCA staff are concerned that any improvements to Kirby Road from Islington Avenue to Weston Road not either be dependent on or lead to a desire to connect Kirby Road between Islington Avenue and Huntington Road. TRCA staff notes that this Kirby unopened road allowance is through very high quality habitat with a steep valley and through which the main Humber meanders. Any crossing would also impact and require TRCA property. TRCA staff may be seeking an Authority resolution on the unopened road allowance of Kirby Road between Huntington Road and Highway 27. e. There is currently a jog at Kirby Road and Pine Valley Drive. There is a PSW at northwest of the jog and a woodland and potential wetland to the southeast of the jog. The elimination of the jog has the potential to result in significant impacts to one or both of these two features and requires detailed analysis to confirm the need and justification. Please clarify whether the TMP is proposing to remove the jog at Kirby Road and Pine Valley Drive. f. Kirby Road between Weston Road and Islington Avenue crosses and is adjacent to many sensitive features. Please note that any future EA should follow TRCA's Crossings Guideline which provides a framework for the design of road crossings of valley and stream features.	
8.	Pages 10, 15, 19, 23 and 31 show maps with the protected GTA West corridor. It is the position of TRCA staff that this protected corridor is tied directly to the Province's EA and that should the Province not proceed with the GTA West highway, the lands be released. Please add language to this effect in the TMP document.	
9.	It appears that the additional widening of Jane Street between Teston and Kirby for Alternative #3 results in a bottlenecking of traffic on Jane Street between Major Mackenzie Drive and Teston Road. It is unclear that the Jane Street V/C ration in Alternative #3 is preferable to Alternative #2. If this alternative is kept, please provide a clear rationale in the final document for the preference of #3 over #2.	
10.	Alternative #2 shows Bathurst Street approach capacity between Teston and Kirby by 2031. Alternative #3 no longer shows Bathurst Street approaching capacity between Teston and Kirby by 2031. As the only relevant difference between alternatives # 2 and #3 appears to be the added widening of Jane between Teston and Kirby, it is unclear how the Bathurst Street V/C ratio was reduced. If this alternative is kept, please confirm and clarify in the final document.	
Memo: Evaluation Criteria and Weighting Methodology		
11.	Criteria: community impact. It is unclear why the metric for community impact is to reduce traffic on local streets. This appears to conflict with the desire for a finer grained collector road system, which improves the efficiency of traffic flow. It is inappropriate for the City of Vaughan to rely on only the Regional arterial road system for traffic flow.	

12.	TRCA staff reiterates their position that the analysis should be re-done to remove any recommendations on Regional roads that differs from the York Region 2016 TMP.	
13.	Active Transportation, alternative 4, notes that the removal of the mid-block crossings reduces connectivity of the Regional active transportation network. It is the opinion of TRCA staff that because an active trail connection could be created at a fraction of the cost and impact along both unopened road allowances, it is therefore a false premise that removing the missing links prevents an active transportation connection. A fulsome alternatives analysis should include an additional alternative of an active transportation only connection between the unopened road allowances.	
14.	Mobility Connectivity Criteria, alternative 3, notes that it adds an alternative crossing of Highway 400 to Teston and Kirby. TRCA staff note that in the absence of the GTA West highway and the local collector roads and network north of Kirby, it is unclear how this additional crossing was modelled. Please clarify the modelling and justification that this mid-block crossing will be required by 2031.	
15.	Surface and Groundwater – please clarify whether the impacts examined are water quantity and quality, and revise the document as necessary.	
16.	Natural Heritage Impacts & Surface/Groundwater impacts – new crossings of the natural heritage system require a far more detailed analysis of existing conditions to fulfil phase 2 requirements of the MCEA process. This level of detail is appropriate for widening and reconstructing existing roads.	
17.	None of the alternatives examined in the memo includes the reconstruction of Kirby Road west of Weston road, and Pine Valley Drive north of Teston. As the other improvements are either proposed already in the York Region 2016 TMP, outside Vaughan's jurisdiction, or subject to separate EAs with network studies, the most important alternatives to analyze are these sections of Kirby and Pine Valley.	
18.	Alternative 4: As Teston Road is being undertaken as a separate IEA with a network analysis, TRCA staff recommends assuming the connection in the analysis with the caveat that it is subject to an IEA, and removing it from consideration here and focus on Kirby Road, which is under Vaughan's jurisdiction.	
19.	Alternative 3: please add only roads that are under Vaughan's jurisdiction and not already planned for widening in the York Region 2016 TMP. Please include Pine Valley north of Teston, Kirby west of Weston Road, and any proposed Vaughan collector roads.	
20.	Community Impacts, Alternative 4. It is unclear how not adding the Teston and Kirby road missing links results in greater traffic on local residential streets because there are not any local road alternatives currently. Please clarify the local roads that would receive higher volumes.	

Climate Change		
21.	TRCA staff finds the climate change impacts criteria in the memo to be completely insufficient and with inappropriate metrics. Air quality is not a metric for climate change mitigation. Climate change and air pollution are predominantly separate issues. Tailpipe emissions such as methane and CO2 are not emitted in sufficient quantities to impact air quality. Conversely, air quality is determined through a combination of various tailpipe emissions, including nitrous oxides (NO and NO2), volatile organic compounds (VOCs), ozone, particulate matter and carbon monoxide (CO). While both issues share mitigation measures that generally reduce tailpipe emissions the relative importance of mitigation versus adaptation measures is different. Climate change is a transboundary issue where the City's impacts on CO2 emissions are far too small on their own to have any impact, so adaptation is very important. By contrast, air pollution impacts are very localized, so mitigation measures can improve local air quality. TRCA staff recommends a separate Air Quality criteria with metrics related to tailpipe emissions. Consider adding the criteria under the Socio-economic Environment category due to the significant potential localized impacts on human health and well-being.	
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Appendix C4:

Stakeholder Workshop Materials

North Vaughan and New Communities

Transportation Master Plan

Stakeholder Workshop #1

Background Context

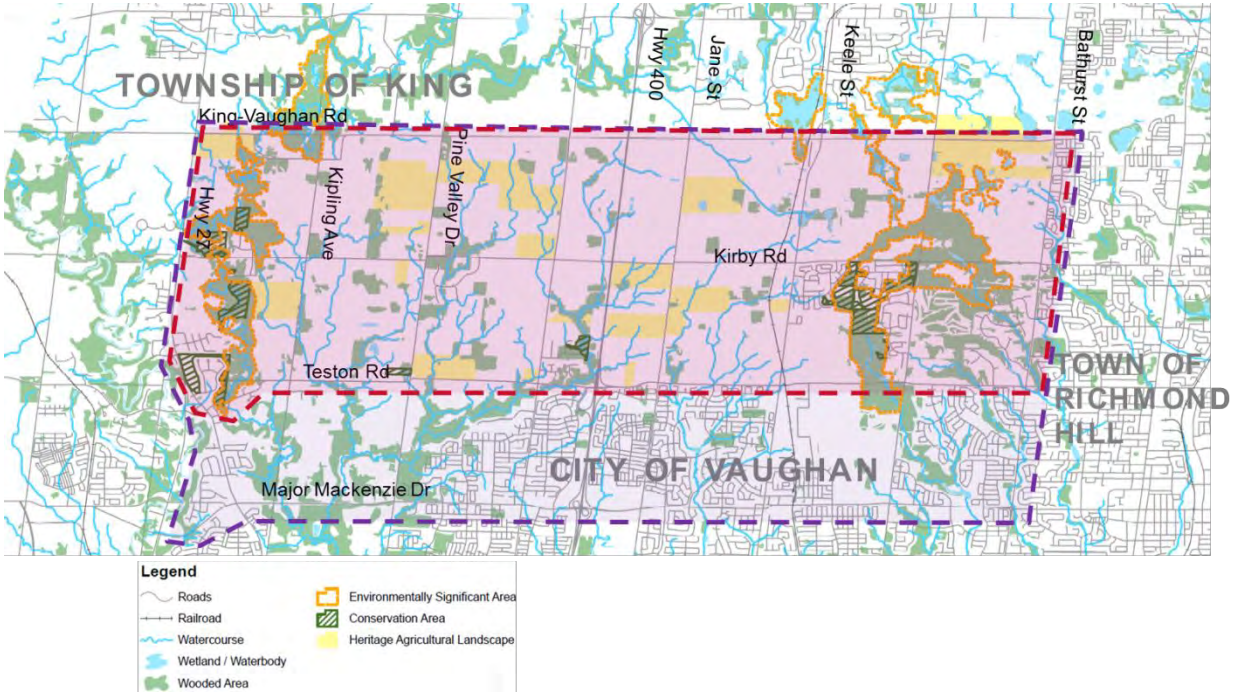
August 19, 2015

Presentation Outline

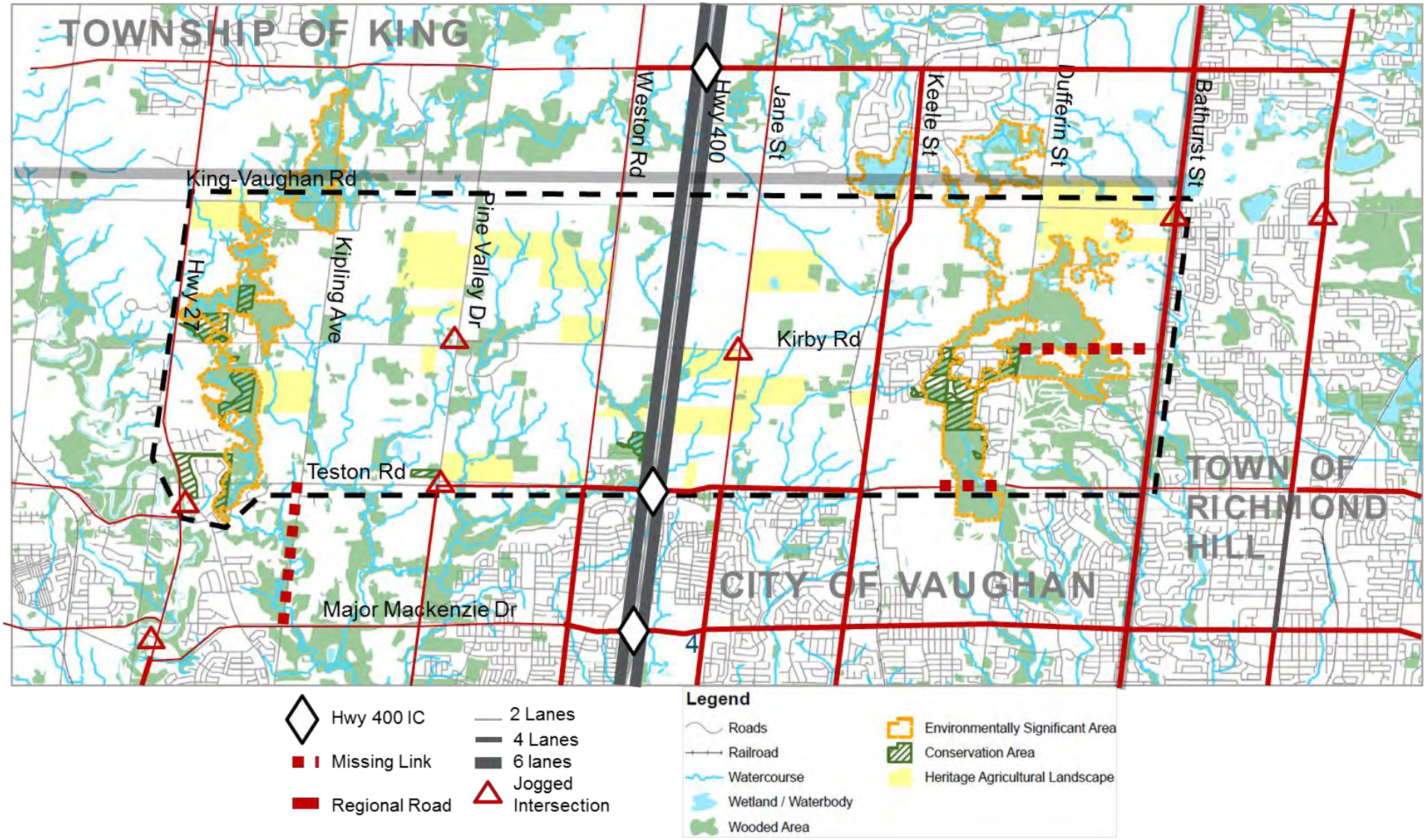
- Study Area Characteristics
- T.M.P. Study Overview
- Background transportation conditions and plans
- Group discussions
- Next steps

Study Area

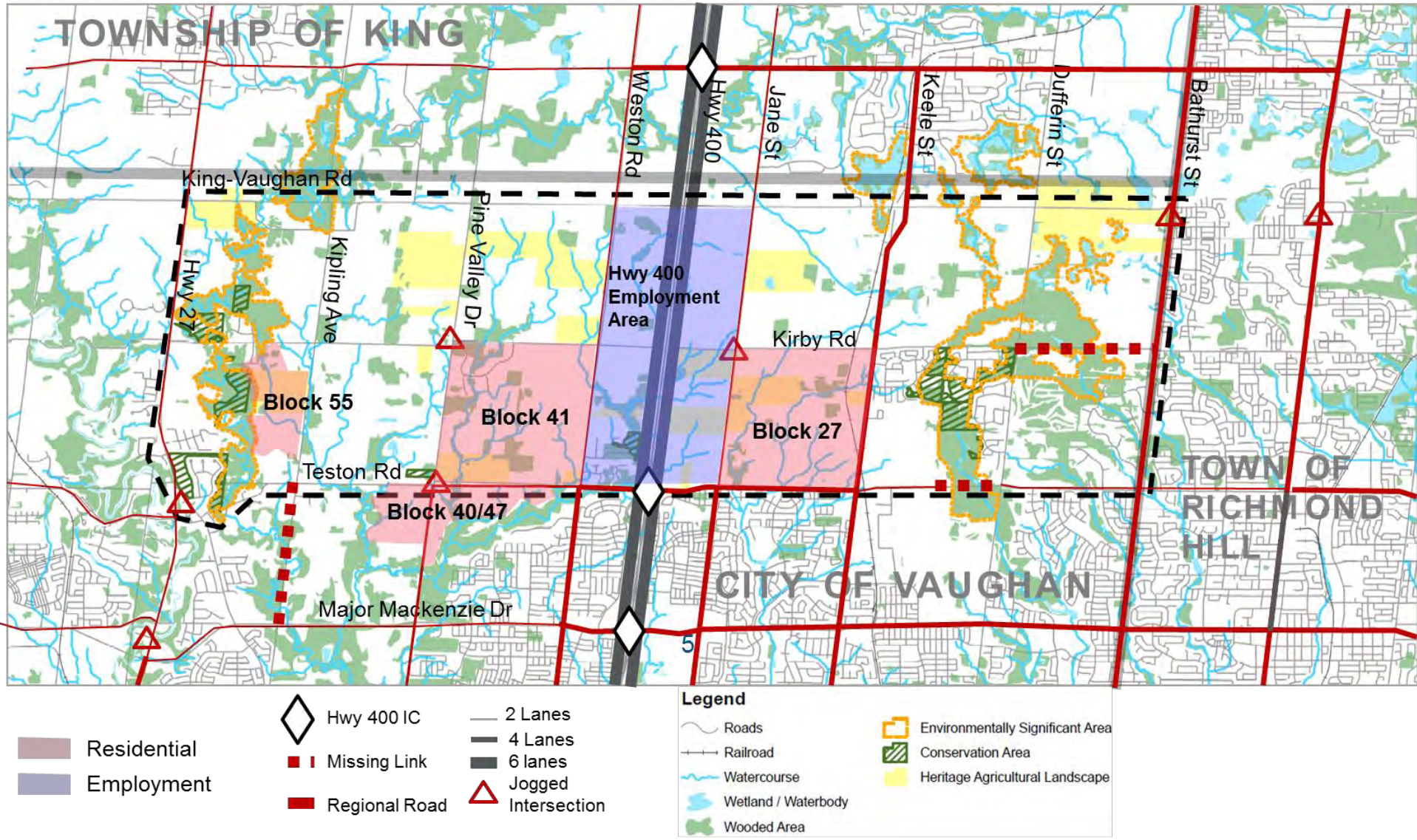
- The **primary study area** is bounded by King-Vaughan Road to the north, Bathurst Street to the east, Teston Road to the south, and Highway 27 to the west.
- The **secondary study area** is bounded by King-Vaughan Road to the north, Bathurst Street to the east, Major Mackenzie Drive to the south, and Highway 27 to the west.



Existing Road Network

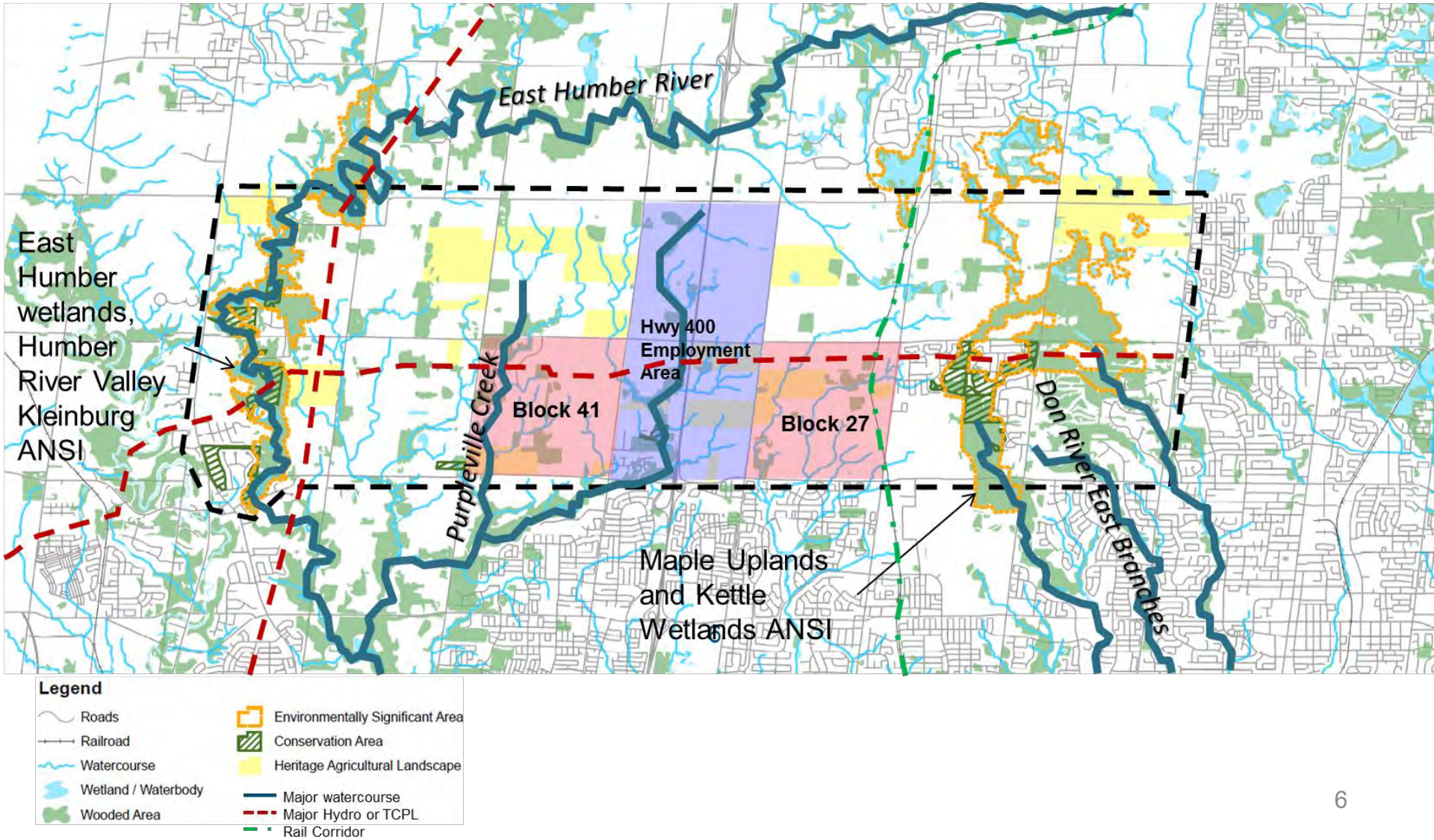


Planned Development



Natural Environmental Features and Utilities

- Redside Dace located within East Humber River, Purpleville Creek, and Don River East Branch
- East Humber provincially significant wetlands
- A.N.S.I.s: Humber River Valley Kleinburg, Maple Spur Channel, Maple Uplands and Kettles Candidate



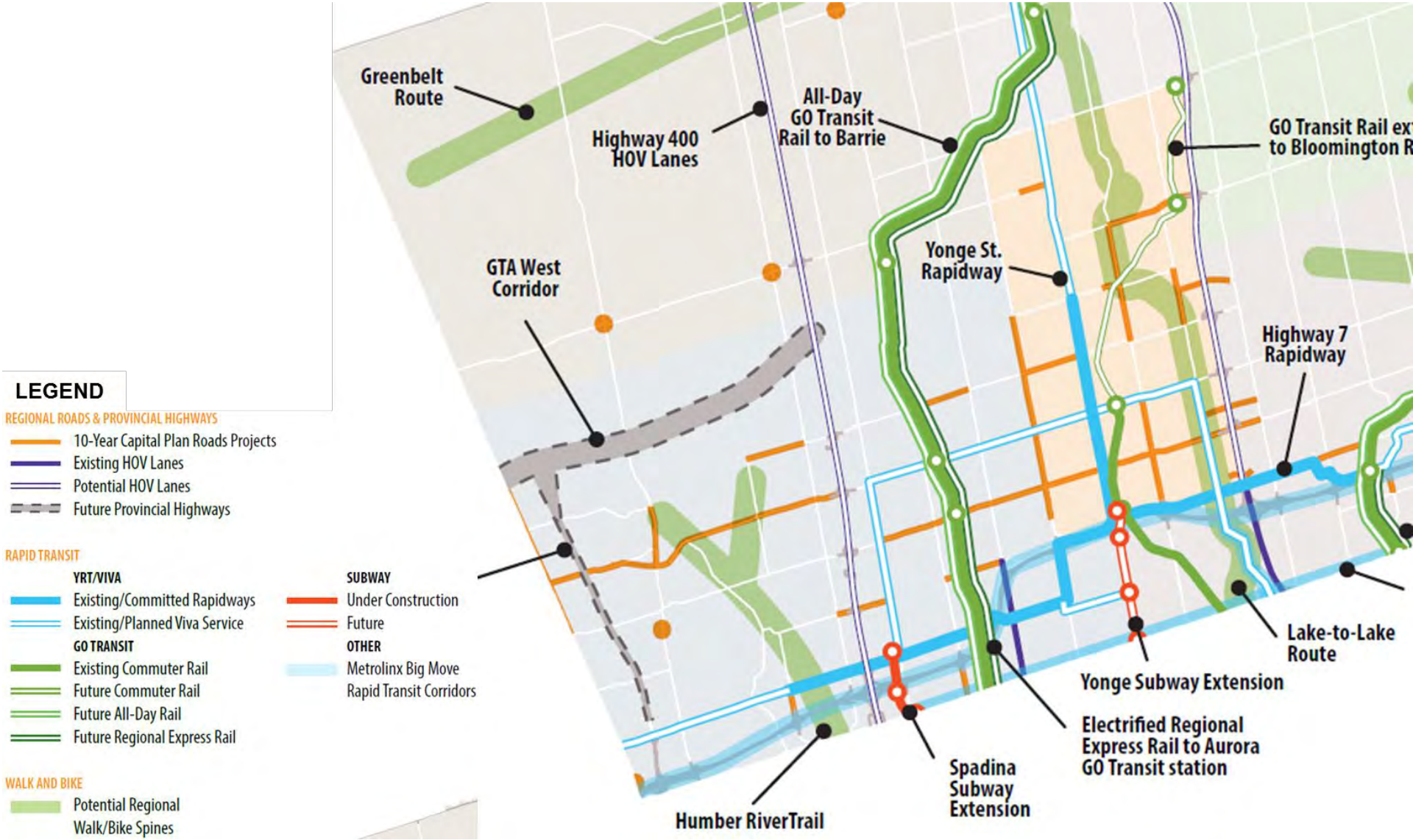
Archaeological Sites

- Sites with archaeological potential have been identified within the study area
- Input from Huron-Wendat First Nation
- T.M.P. study recommendations shall consider impacts to our archaeological and cultural heritage

T.M.P. Overview

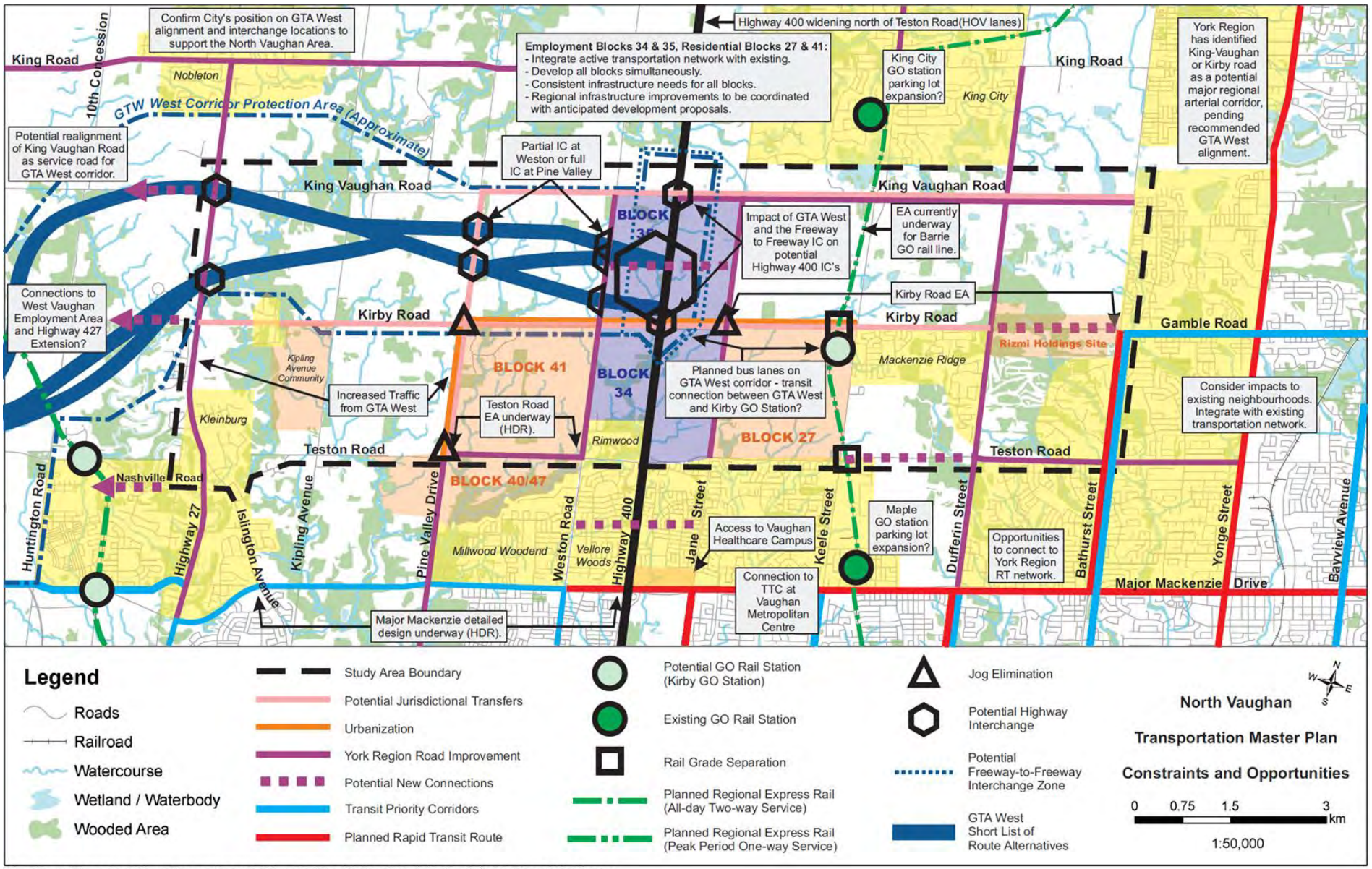
- Develop a well-integrated, multi-modal, sustainable transportation network
- Accommodate growth to 2031
- Take into consideration and align with York Region T.M.P. update's recommendations to 2041
- Block 27 and Block 41 Transportation Networks
  - Connect to broader N.V.N.C.T.M.P. study area
- Planning for potential Kirby GO Station
  - Phasing of an interim transit hub
- Pedestrian and Cycling Network Plan
- Phasing and Implementation Plan

Regional Transportation Planning Context



Source: York Region T.M.P. Open House 2, June 2015

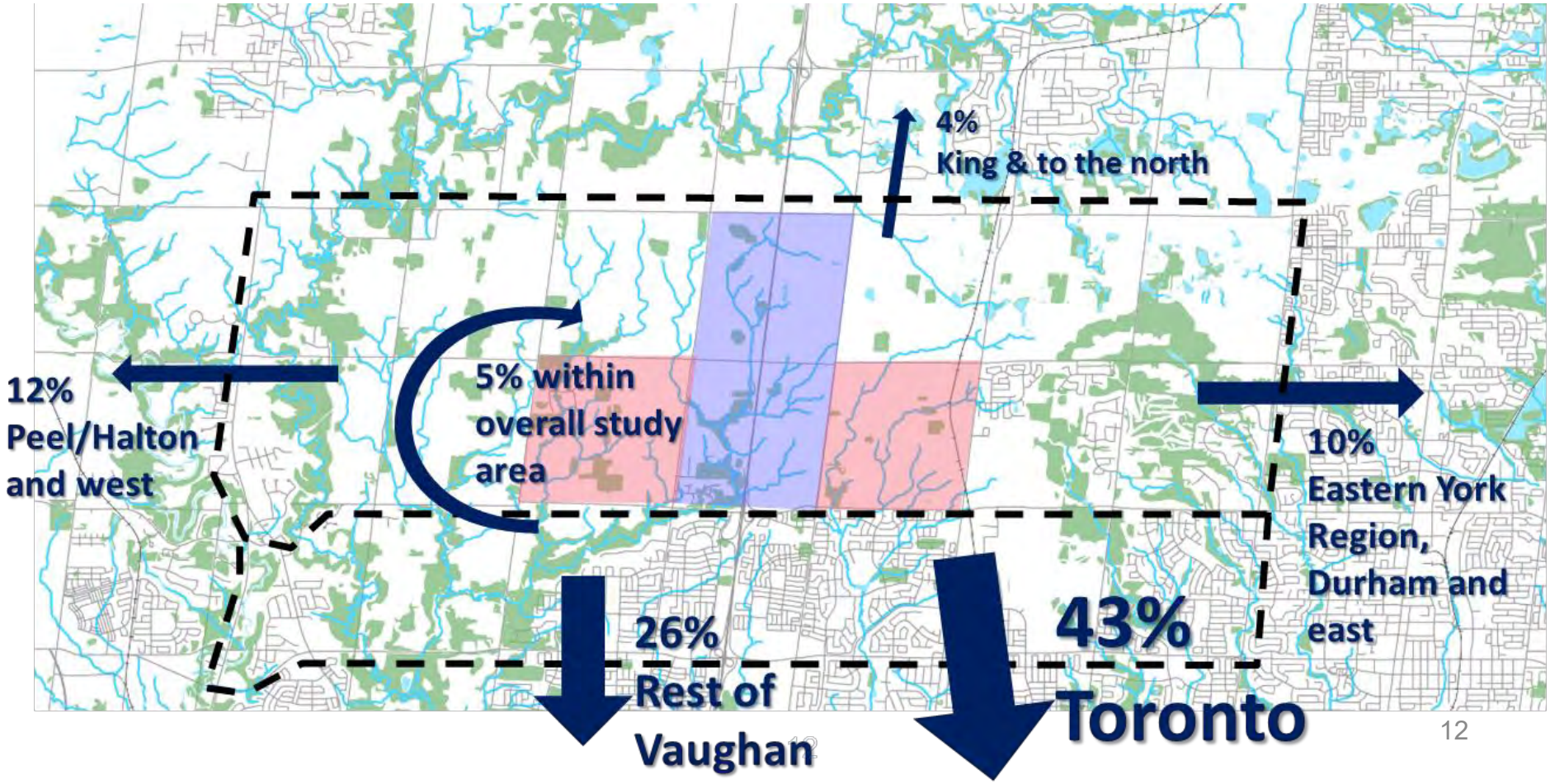
Key Issues Summary Map



Background Transportation Conditions

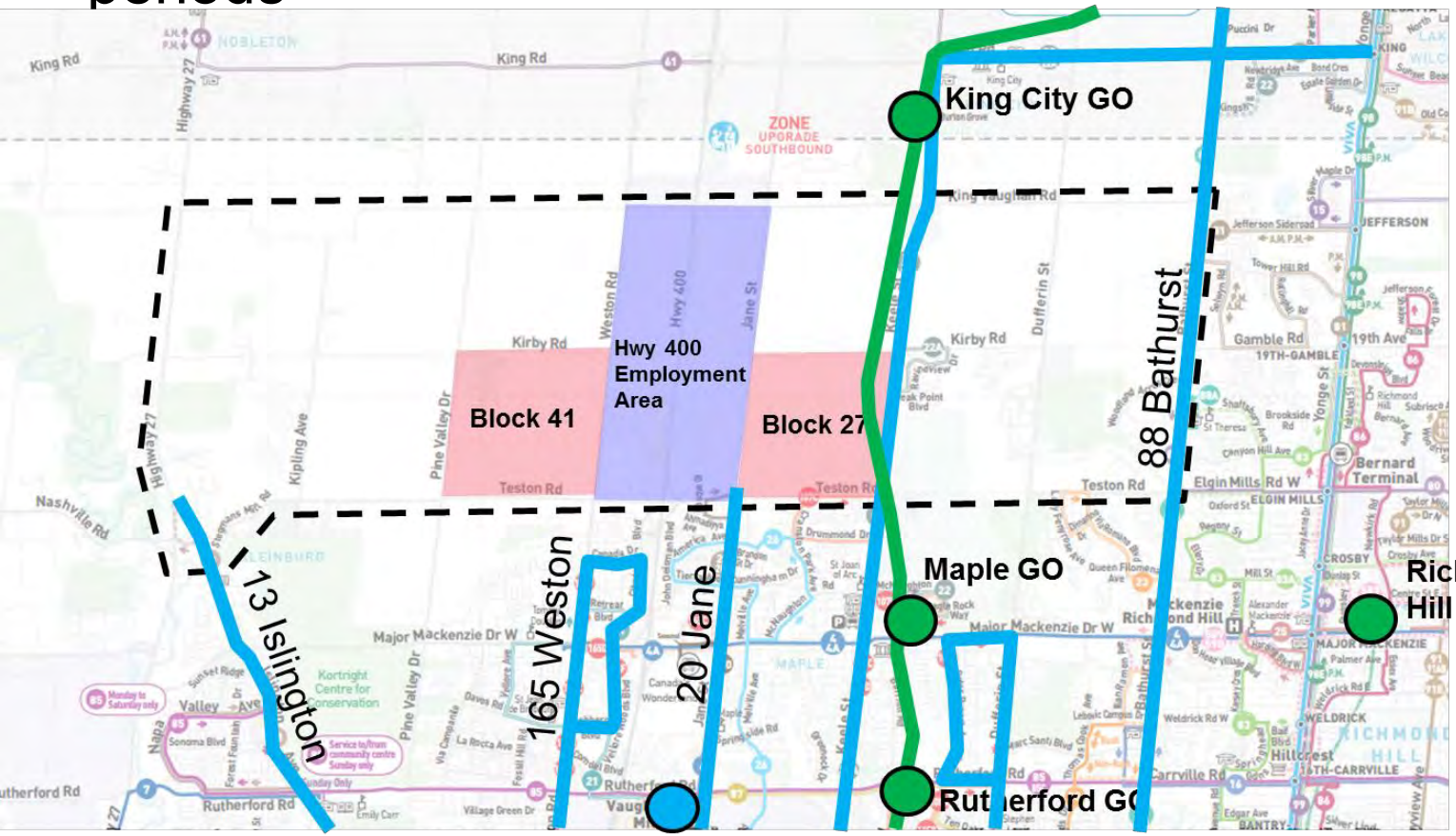
Existing Work Trips from the Study Area

- Primarily rural communities, 90% auto trips
- Low self-containment (within Study Area)
- Primary destination to Toronto
- Over 80% auto drivers



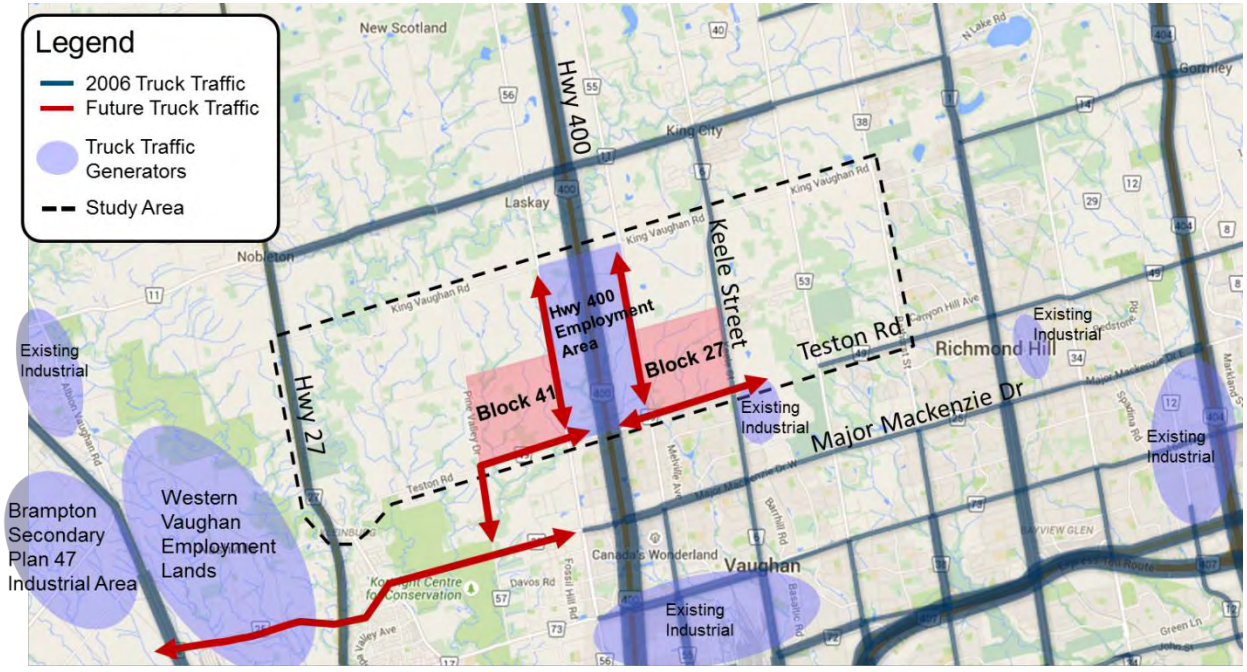
Transit Service

- **Y.R.T. service** via Y.R.T. Routes 13 Islington, 22 Keele, 88 Bathurst, and community services south of Teston Road
- **Commuter transit service** to and from Toronto via GO Rail during peak periods and GO Bus service during off peak periods



Truck Traffic

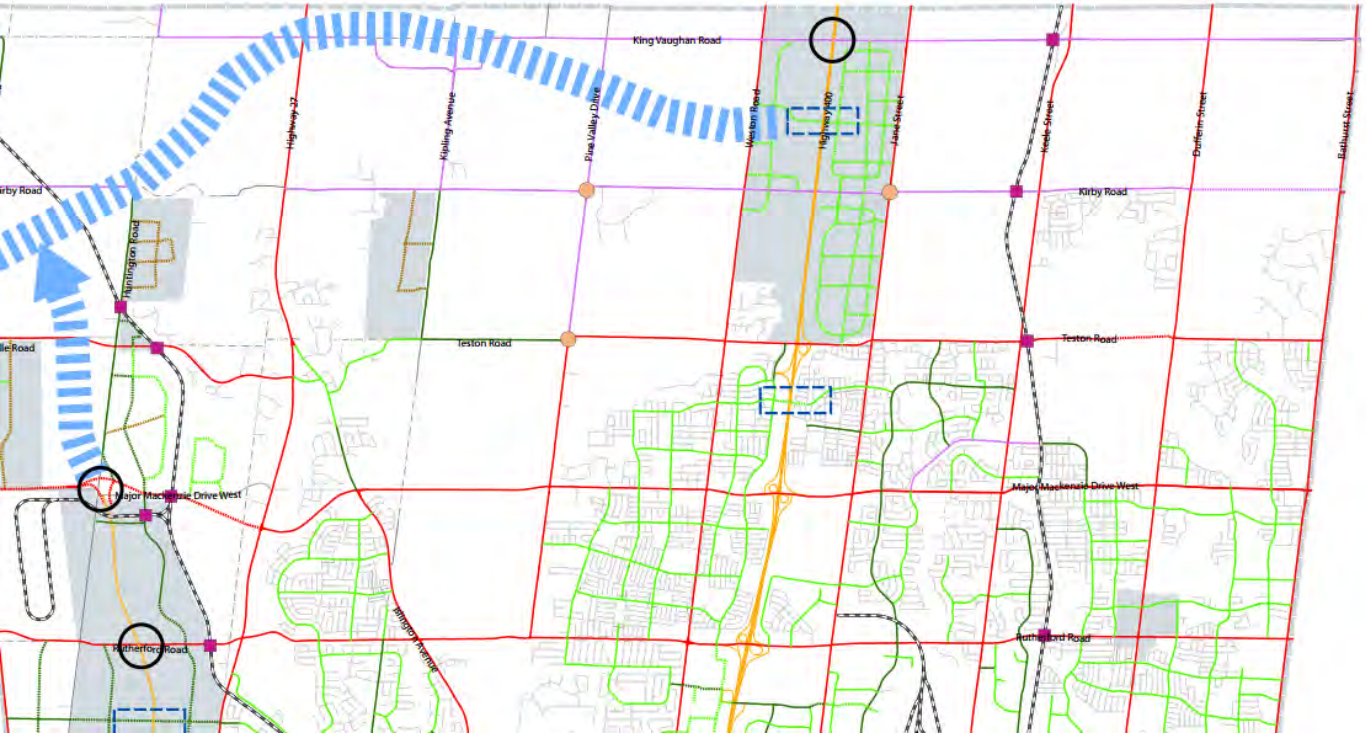
- Highway 27, Highway 400, and Keele are major truck routes within the Study Area
- Teston Road is a truck route in the east end of the study area and through the Town of Richmond Hill
- Future east-west connectivity to support new growth areas, truck traffic generators



Source: M.T.O. 2006 A.A.D.T. and 2011 Cordon Count Program

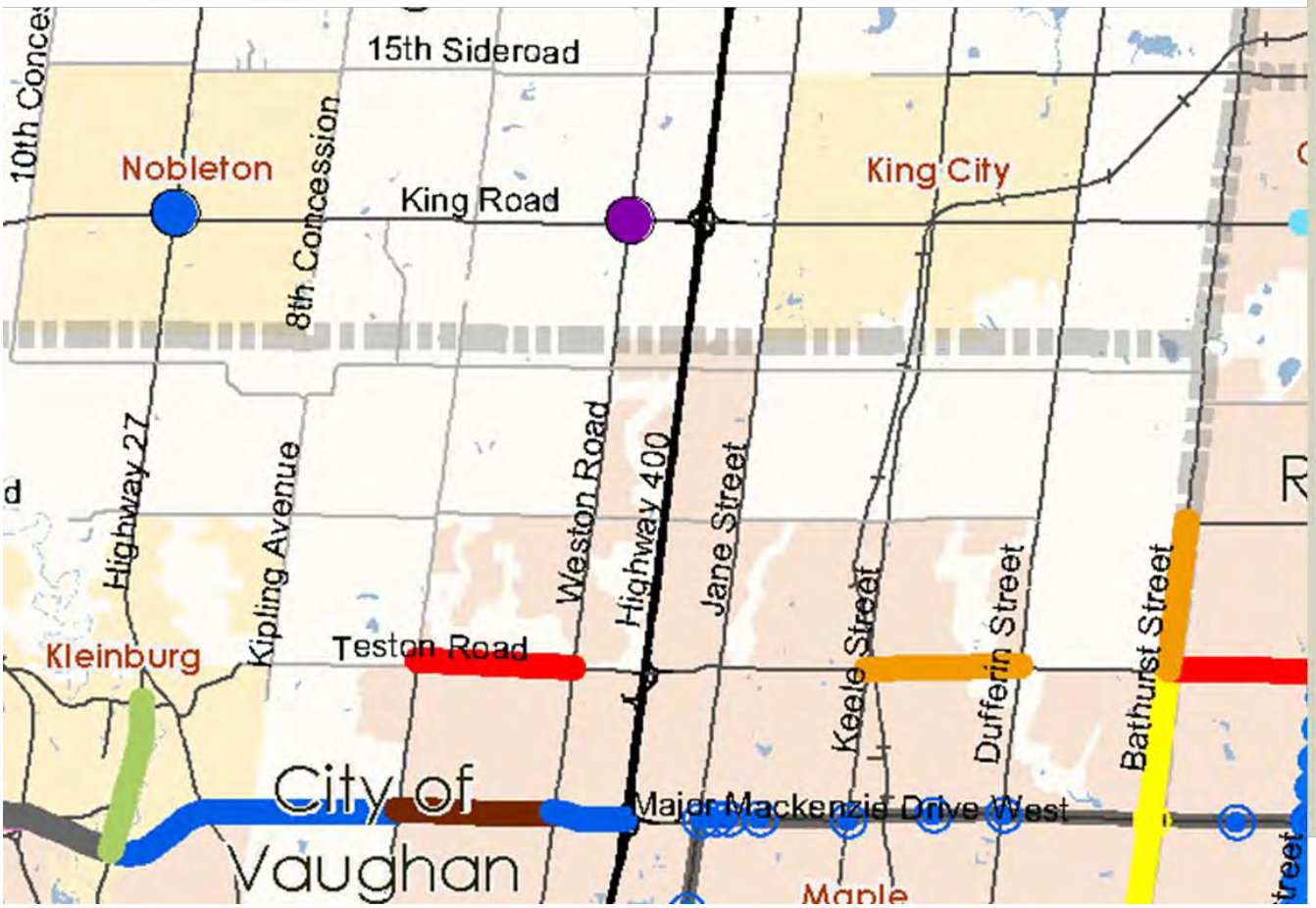
Future Planned Highway and Road Improvements

- G.T.A. West
- 400 Widening (Major Mackenzie to King Road H.O.V. lanes)
- 427 Extension to Major Mackenzie and G.T.A. West
- Proposed Collector Road system in 400 Employment Area
- Kirby and Teston missing links, Highway 400 midblock crossings



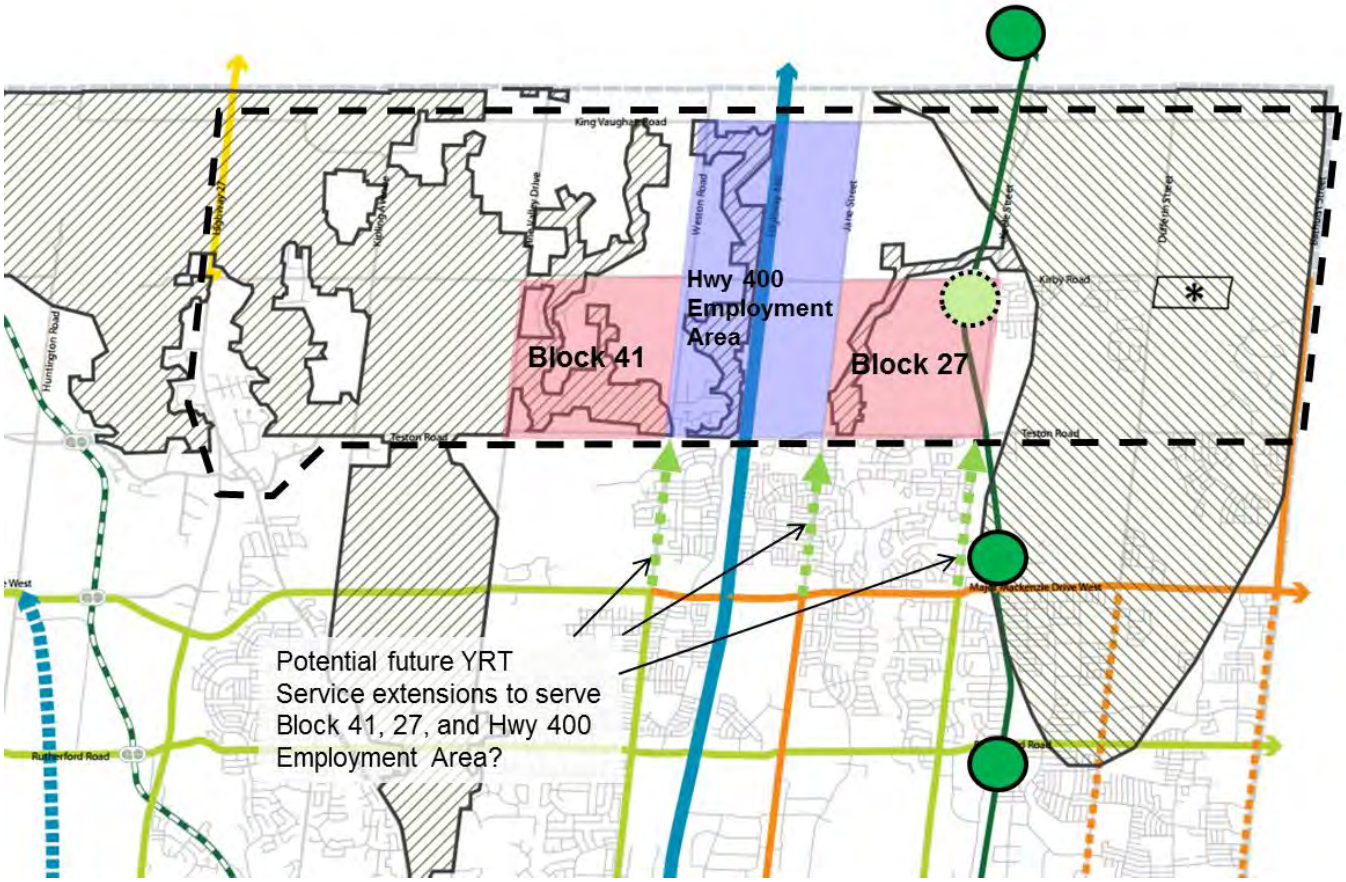
Future Planned Improvements – York Region

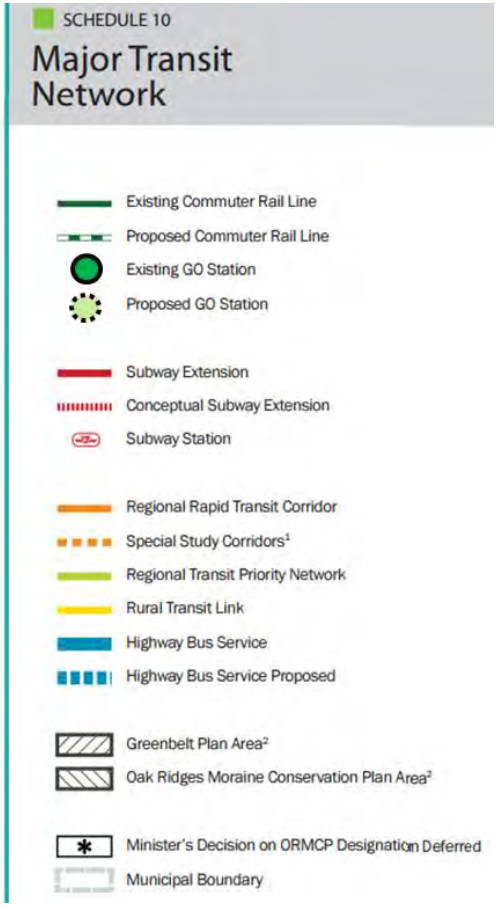
- 2015 10-year Roads Capital Program



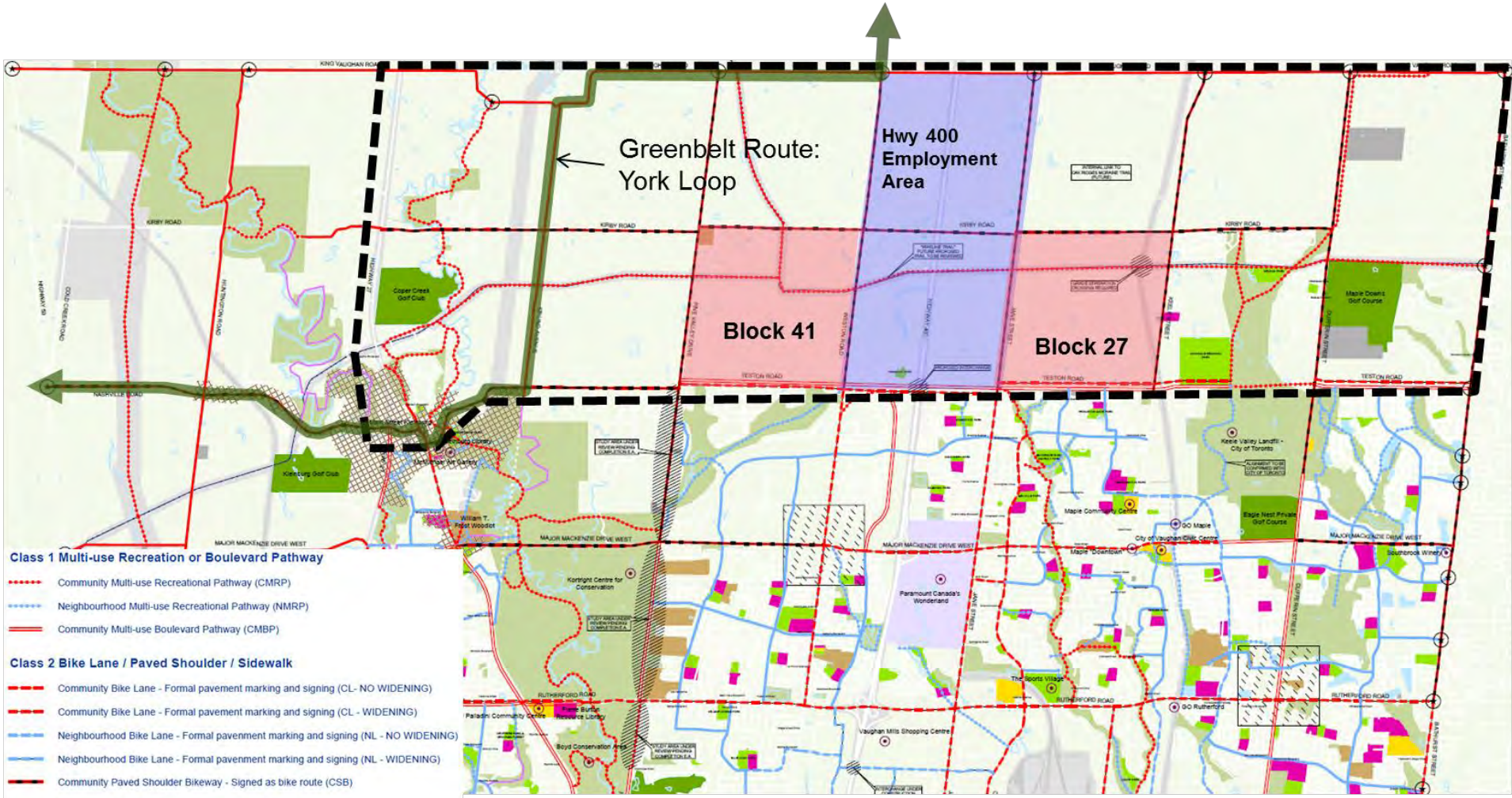
Future Planned Transit Improvements

Metrolinx and Y.R.T.

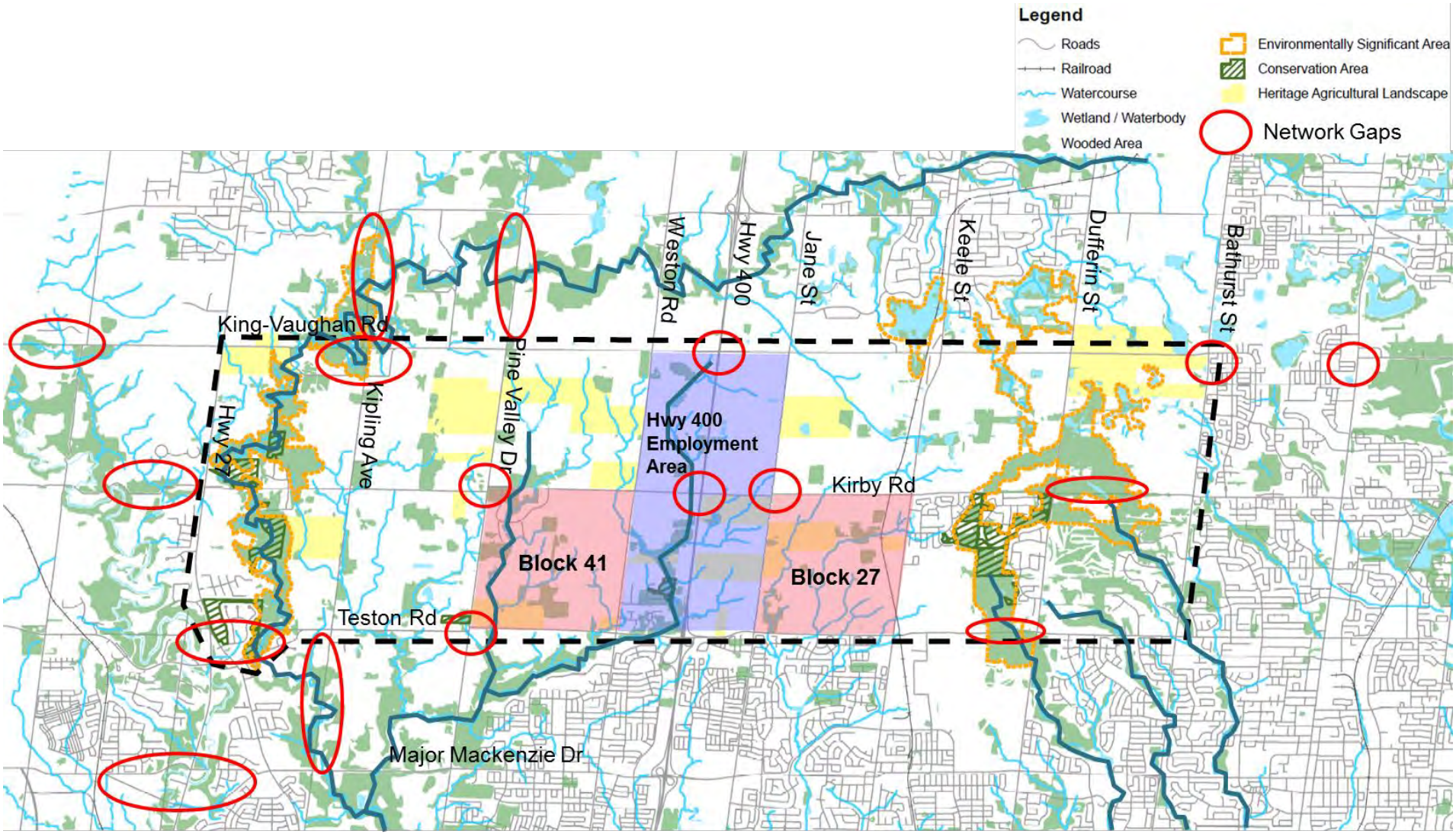




Vaughan Pedestrian and Cycling Master Plan



Gaps in the Current Transportation Network



Next Steps/Schedule

Stakeholder Visioning Workshop – August 19

- P.I.C.#1 – October 13, 2015 (Tentative)
- Identification of Alternative Solutions - Fall 2015
- Community Workshop - November 2015 (Tentative)

Stakeholder Workshop #2 – February 2016

- P.I.C.#2 - Late March 2016
- Draft Report Summer 2016

Stakeholder workshop #3 Late Summer/Fall 2016

- Final Report Fall/Winter 2016

Workshop Discussion

Part One:

Transportation ideas to support growth and development

Part Two:

Improving and prioritizing transportation service

1. Opportunities to Support Growth and Development

- What are the key opportunities you feel could be considered to support growth and development
  - Missing links?
  - Cycling connections?
  - More travel choice?
  - Support for healthy, active lifestyles?

1. Opportunities to Support Growth and Development

- What are the key challenges that need to be addressed to support growth and development:
  - Protecting the natural environment
  - Protecting existing communities
  - Protecting heritage features
  - Transportation service
  - Other ____

2. Improving and Prioritizing Transportation Service

- How to improve service for each of the following?
  - Cycling facilities
  - Sidewalks and trails for walking
  - Y.R.T. transit services
  - GO services
  - Road widenings and expansions
  - Other _____

2. Prioritizing Transportation Service

- If you have $10 to spend on transportation, how would you spend it to improve transportation service?
  - Cycling facilities
  - Sidewalks and trails for walking
  - YRT transit services
  - GO services
  - Road widenings and expansions
  - Other _____

Thank you for your input!

Appendix C5
PIC#1 Materials

Public Meeting Feedback Report

PIC #1 - Tuesday, October 13, 2015

Public Meeting Feedback Report

This report outlines the key messages and input from Public Information Centre 1 (PIC) held on October 13, 2015 at the Vaughan Civic Centre. Notice for the PIC was published on October 1st and October 8th in the Vaughan Citizen. Letters and emails were distributed to Stakeholder Groups (landowners, first nations and aboriginal groups, ratepayer groups and the Vaughan Bicycle User Group) and to Technical Agencies (including Ministry of Transportation, Metrolinx and York Region). The purpose of PIC 1 was to provide information about the study, to learn about issues and challenges and to develop input on a future vision for the North Vaughan and New Communities Transportation Master Plan (TMP). The PIC was attended by 15 residents who provided input through information stations on:

- Existing conditions.
- Ideas for developing a vision for the TMP.
- Opportunities for supporting growth and development of North Vaughan and New Communities.
- Key issues/challenges to be addressed in the TMP.
- Ideas for improving transportation service in North Vaughan and New Communities for cycling, walking, transit, road widenings and expansions.

Tyrone Gan of HDR Corporation gave a presentation on the context for the Transportation Master Plan including an overview of background transportation conditions and planned improvements. Community members rotated around the information stations providing ideas and comments through writing on flipchart paper and display posters. Additional input was gathered through comment forms. This report prepared by Sue Cumming, MCIP RPP, Cumming+Company, Consultation Facilitator provides a summary of what was heard through the plenary and group discussions. The workshop presentation is available at **www.nvnctmp.ca**

In This Report

VAUGHAN Public Works

HDR

1. Identified concerns within or surrounding the community

Community members reviewed background existing transportation conditions and future planned improvements and identified the following top concerns within or surrounding the community:

- Existing traffic congestion and lack of east-west road connections.
- Concerns about how to prevent Kleinberg and Nashville from being inundated with traffic trying to go east to west (from Hwy. 400 to Peel Region).
- Better protection of Kleinberg from traffic infiltration through the community – i.e. dedicated turn lanes to incentivize motorists to use Pine Valley Road instead of Teston Road into Kleinburg. More focus on putting in place measures to reduce infiltration.
- Need for additional turn lanes from Nashville south to Hwy. 27 to allow for better traffic flow. It was noted that at present roads both south and west are one lane and it gets very congested.
- Better transit linkages from Kleinburg to Jane Street/Hwy.7 and into Toronto.
- Lack of connections for cyclists and pedestrians to safely cross over Hwy. 400.
- More accessible trails, cycling and walking paths and active transportation. More focus on accessibility is needed within the Natural Heritage System.
- Addressing how to integrate plans for Block 41 with the Transportation Master Plan vision and ultimate findings in a way that is implementable and creates better ease of movement for community members as a priority.

2. Key words/phrases that best describe ideas for the future vision of transportation in North Vaughan

The following key words/phrases were noted:

- Less congestion. More reliable and efficient travelling connections throughout the area.
- More connectivity and porosity through major blocks; more alternatives for drivers.
- Improved connections across the top of Vaughan. A GTA West that is at the King-Vaughan Line extending from Hwy. 404 to Hwy. 427.
- Better access for seniors to medical facilities – i.e. from Kleinberg/Nashville to hospitals.
- Better public transportation with better linkages to Toronto.
- Strategies for parking at GO Stations with more focus on convenient transit connections to get people to the train and back efficiently.
- Opportunities for cycling and walking through the extension of the transportation network.
- Improved safety for pedestrians including complete sidewalks.
- Improved safety for cyclists with better cycling facilities. More cycling/bike racks.
- More integration of active transportation with active recreation.
- More opportunities for recreation.
- Preservation of greenbelt and rural areas.
- Innovative/new ways of thinking about transportation.
- Transportation first, then development - Develop the transportation infrastructure upfront.
- Solve existing problems first, and then maybe move forward with development plans.

3. Key opportunities that should be considered to support the growth and development of North Vaughan and New Communities

- Kirby and Teston connections
- Integrate active transportation: from where people live to their destination with priority for connecting to GO Stations, TTC, schools, big stores and medical facilities.
- Address missing links to create better connections.
- Take advantage of diagonal lines short cuts for pedestrians.
- Integrate (opens up access & opportunities) active transportation with active recreation areas, Natural Heritage Systems and in the Greenbelt.
- Integrate study processes by sharing data and resources and streamlining study timelines – i.e. coordinate Teston Road EA with planning in Block 41.

4. Key issues/challenges identified at the PIC

Challenges with the road network:

a. Poor east-west connections. Lack of continuity from Keele to Dufferin on Teston.
b. Poor highway crossings with the need for several Hwy. 400 crossings to reduce east/west blockage.
c. Making the case for the Province to select the more northern route for the GTA West to improve aesthetics, to reduce backup and to reduce pollution (noise and other).
d. Congestion at GO Stations. Too heavy reliance on driving to GO Stations resulting in high demand for parking.
e. Traffic from areas outside of Vaughan (to the west and north mostly) driving into Vaughan to get to GO Station or to cross Hwy. 400.
f. Poor access to existing and planning hospitals and medical facilities from areas like Kleinberg/Nashville to existing or planned hospitals.
g. Poor conditions and need for more consideration for trucks/truck operation on steep grades.
h. Half-empty Viva buses blocking traffic.
i. Consider saying no to any new development until transportation infrastructure is built.

Challenges for walking:

a. Missing links.
b. Poor winter control or none.
c. Few short cuts.
d. Crosswalk signage that is inoperable.
e. Crosswalk spacing is too far apart with the need for more crosswalks.

Challenges for cyclists:

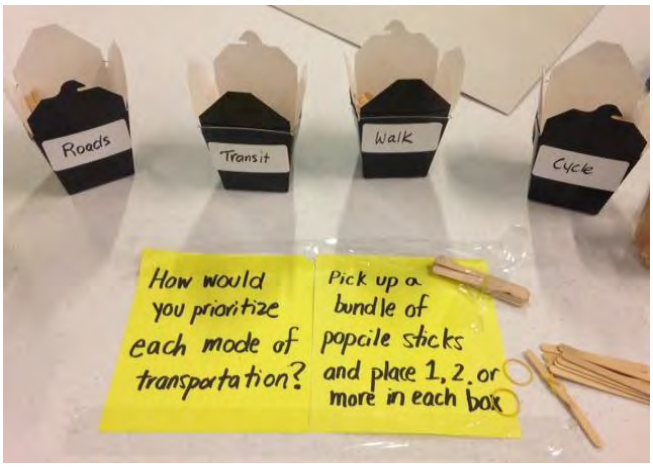
a. Missing facilities. Need for more designated/segregated bike lanes.
b. No safe bicycle parking and many places no bicycle parking at all.
c. No winter control.
d. Construction projects failing to provide for cyclists/accessibility.

5. Key Ideas for improving transportation service and infrastructure for North Vaughan and New Communities

Transportation Service	**Ideas and suggestions for improving each transportation service**
Cycling facilities	• More natural paths – maybe through green areas. • More lanes like Peter Rupert – it is only paint. • Better protection of cycle lanes. • Consider using hydro lines, pipelines, other utility corridors for cycling. • More designated/segregated bike lanes.
Sidewalks and trails for walking	• Ban multi-use trails. Pedestrians and cyclists don't mix. Different speeds create conflicts. • Add crosswalks on regional roads. • Add overpasses or tunnels to cross regional roads/highways/creeks, etc. • More crossovers of highways.
York Region Transit (YRT) Service	I would take transit if.... – The schedule was more convenient. – There was better service on Saturday mornings. – There was more focus on getting to key destinations i.e. schools, access to shopping areas and malls, more downtown routes, etc.
GO Services	• Key destinations where transit service is desired: – More frequent service into downtown Toronto. Would like to have service on Saturdays from Maple to downtown for example. – Weekend service to Barrie. • Kirby GO Station is a good idea. • Would like to see a new station in the northern part of Vaughan for riders from the north to connect to instead of having to come into Vaughan on our busy streets. • Less focus on using the car and more focus on efficient transit connections to the GO Station. Would like to see a review of parking undertaken to see where it could be reasonably reduced to encourage more transit ridership. It was noted that people should be able to connect with transit without having to drive and park at a GO Station. • Metrolinx/GO does a great job at communicating about GO Service and would like to see this continue.
Road Widenings and Road Expansions	• Add more right-in, right out sections on arterial roads and reduce number of stop lights. • Create more capacity on east-west routes – vehicle movement is slow and there is too much traffic. • Address missing links and lack of connections. • Introduce synchronized traffic lights or smart technology (based on actual volumes). For example, for Colussus Drive at Hwy. 7 - "no right turn on red" could be switch on/off as needed.

6. Ideas about prioritizing transportation infrastructure

At Station 6, community members could identify how they would prioritize each mode of transportation by placing one or more popsicle sticks (from a bundle of ten) into a box delineating a different mode. This provided community members the opportunity to address (at a high level) where emphasis should be placed in the Transportation Master Plan. It was observed that the prioritization was generally the same between roads, transit, walking and cycling with marginally more emphasis for roads and cycling over walking and transit.



7. Other comments/ideas

- Ensure that transportation numbers account for trips from people living outside of Vaughan.
- Review how we can improve access to the GO and to Highways for people north of Vaughan without their having to come into Vaughan.
- Survey people at the GO Station to get their ideas about improving connections to the GO.
- Promote the many benefits of improving car movements and reducing congestion: reduced pollution, more pedestrian opportunities through connected streets, better transit options, etc.
- Plan for better pedestrian areas.
- Improve snow ploughing on sidewalks and around long curbs in existing areas.

For further information, contact:

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Vaughan, ON L6A 1T1
Bus: 905-832-8585 Ext. 8192 | Fax: 905-832-6145 | Email: Winnie.Lai@vaughan.ca

Jonathan Chai, P.Eng., Project Coordinator, HDR Corporation
Bus: 289-695-4629 | Fax: 289-695-4601 | Email: Jonathan.Chai@hdrinc.com

PIC #1 materials can be found at **www.nvnctmp.ca**

This PIC facilitated and report written by:

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Cumming+Company
Consultation Facilitator
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Email: cumming1@total.net

VAUGHAN Public Works

HDR

Public Information Centre #1

Background Context

October 13, 2015

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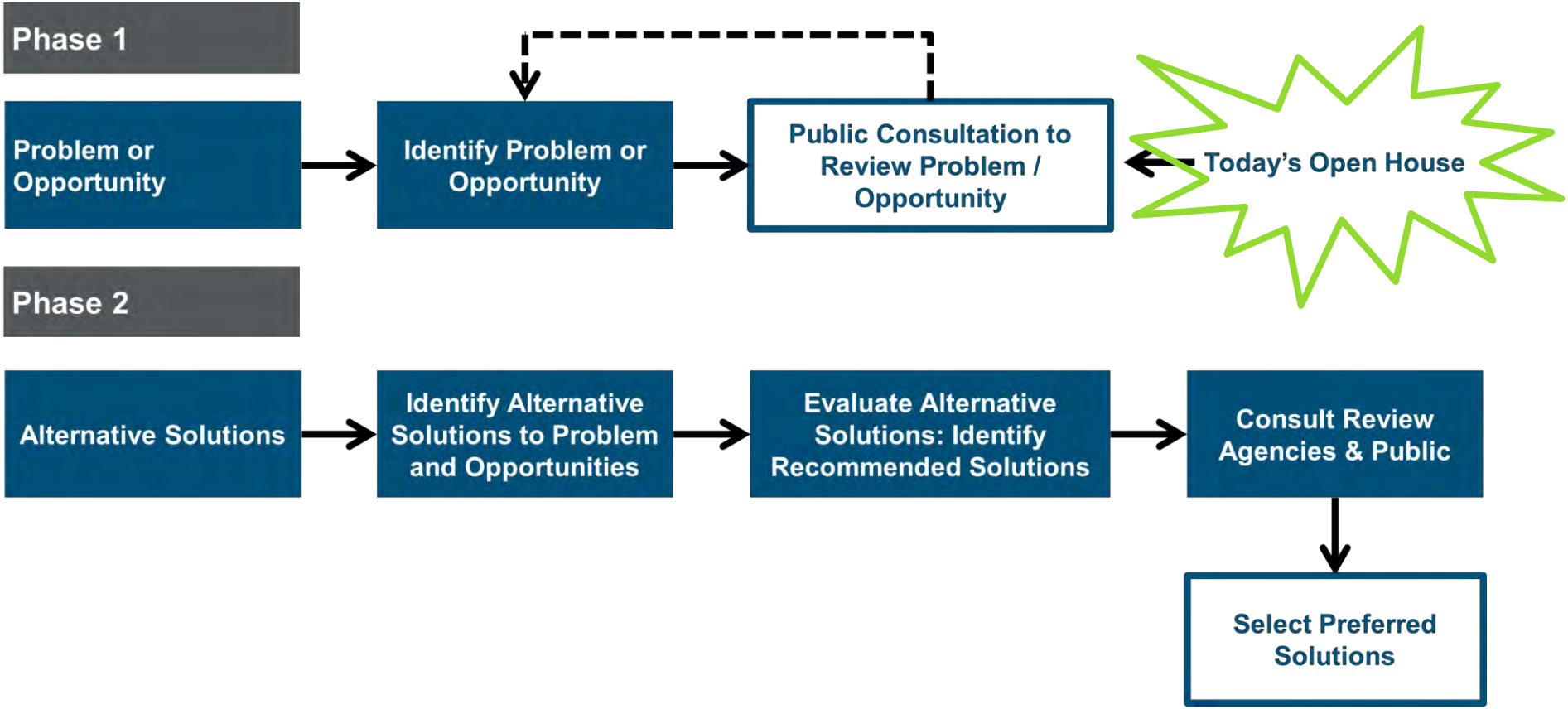
Presentation Outline

- TMP Study Process
- Study Area Characteristics
- Background transportation conditions and plans
- Next steps

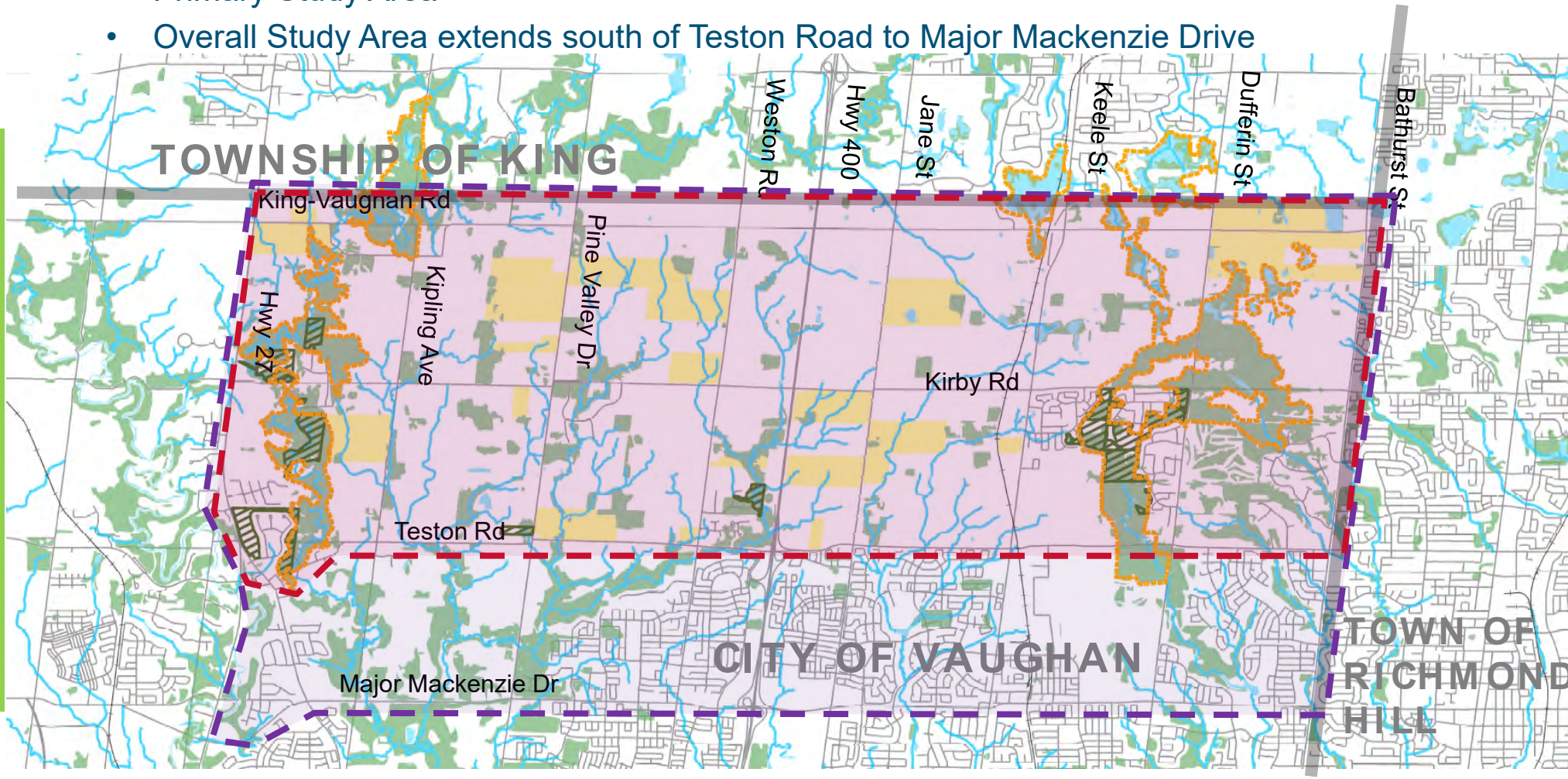
TMP Study Process



Where are we in the Study?

Study Area

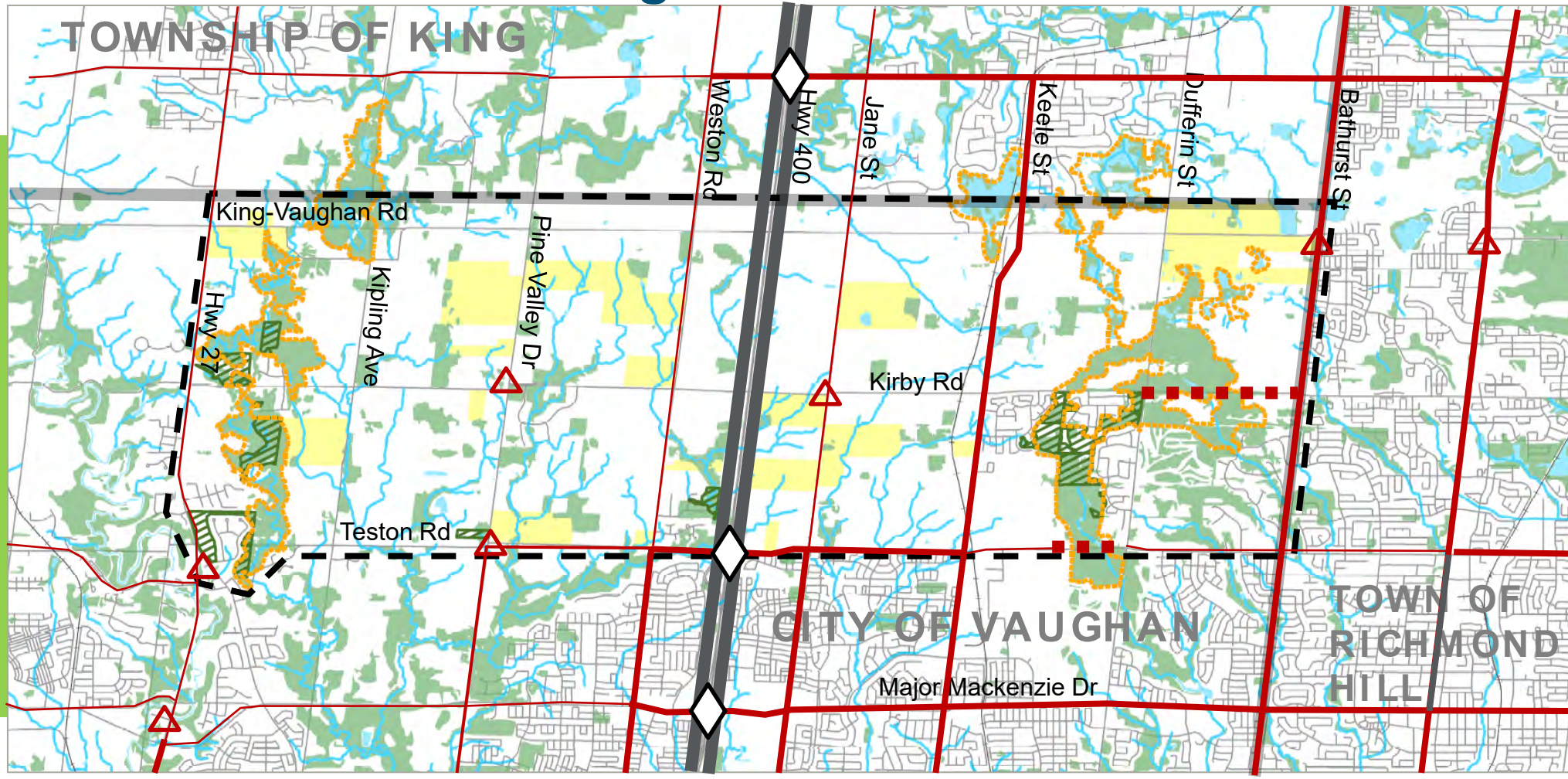
- Primary Study Area
- Overall Study Area extends south of Teston Road to Major Mackenzie Drive



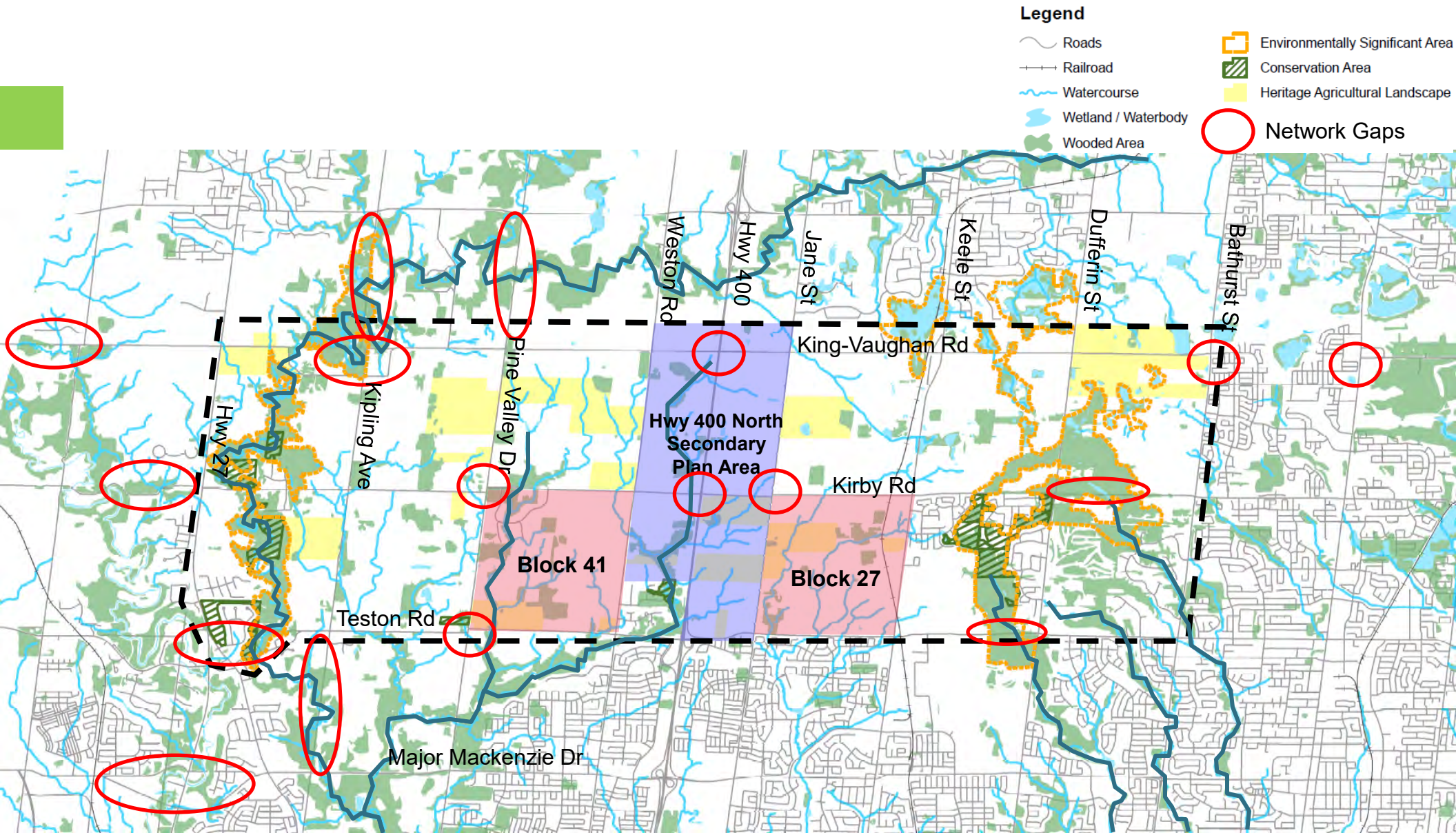
TMP Study Objectives

- Develop a well-integrated, multi-modal, sustainable transportation network
- Accommodate growth to 2031
- Build on the City-wide TMP and the Official Plan
- Take into consideration and align with York Region TMP update's recommendations to 2041

Existing Road Network



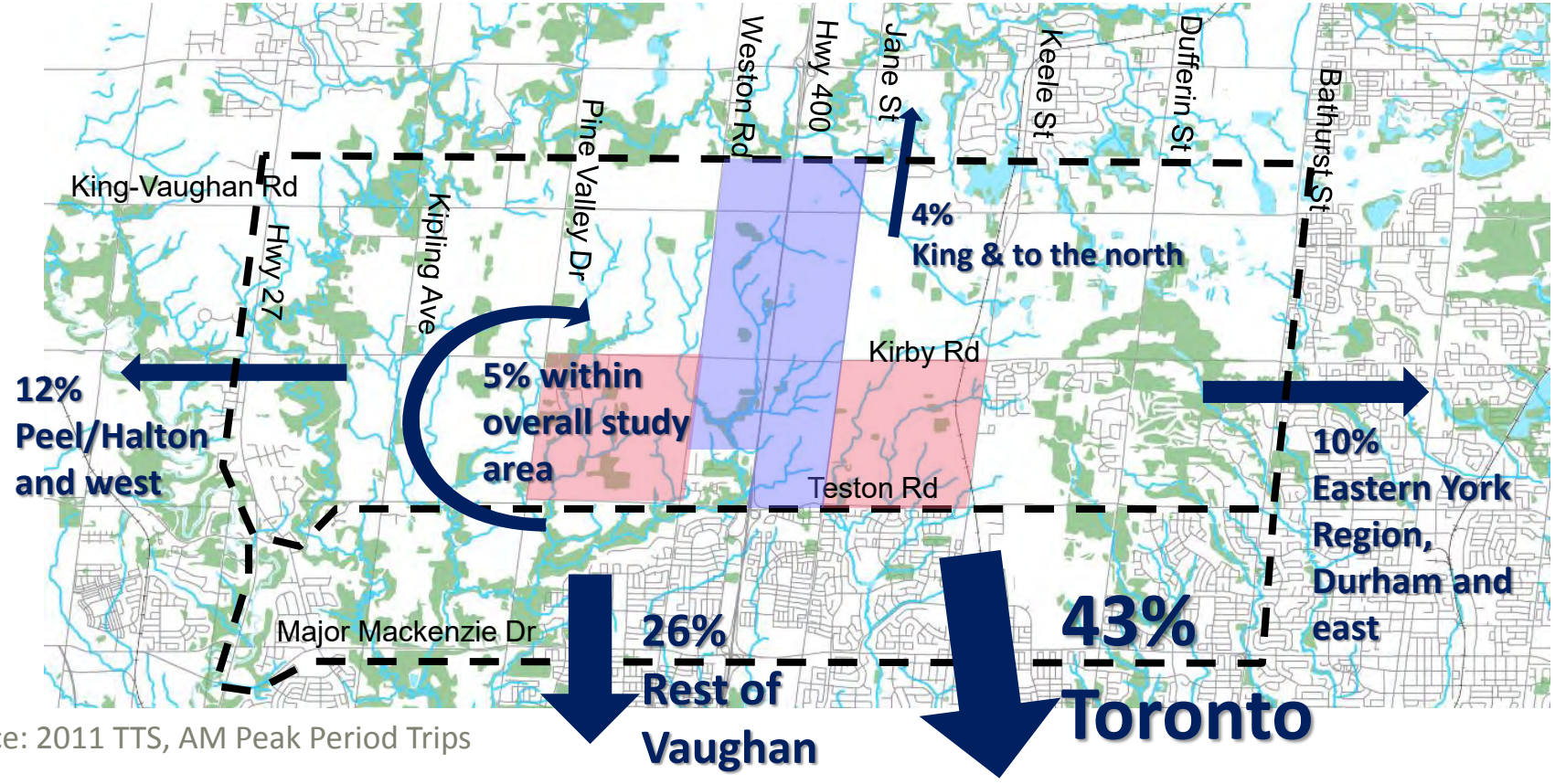
Gaps in the Current Transportation Network



Existing Work Trips from the Study Area

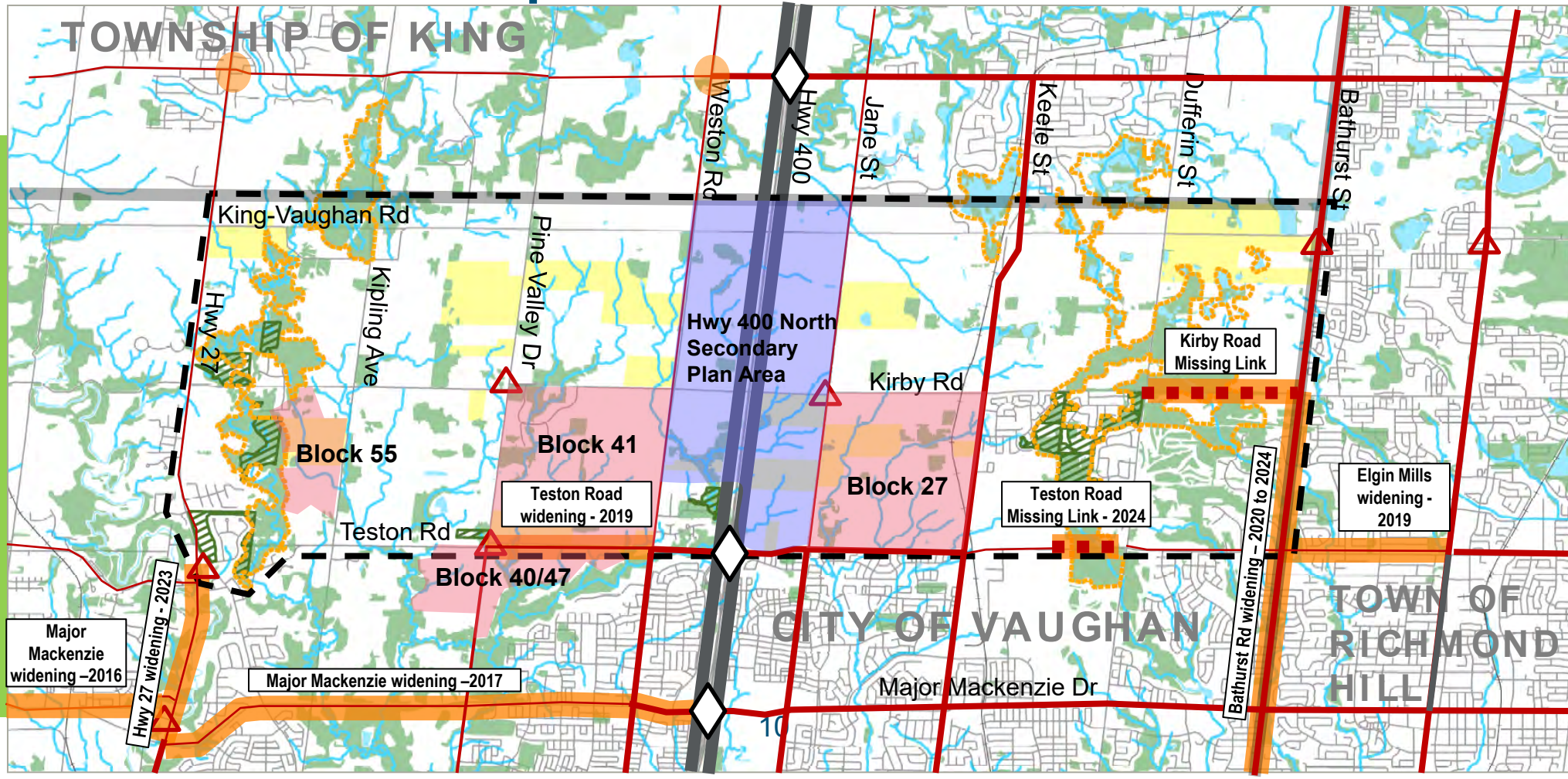
- Primarily rural communities, 90% auto trips
- Low self-containment (within Study Area)
- Primary destination to Toronto
- Over 80% auto drivers

Work Trip Mode Share	NVNCTMP Primary Study Area	NVNCTMP Overall Study Area	City Wide
Walk	0.0%	0.2%	0.7%
Cycle	0.0%	0.2%	0.2%
YRT	4.4%	5.8%	9.6%
GO	5.6%	5.8%	4.9%
Auto Passenger	5.3%	6.8%	7.1%
Auto Driver	84.7%	81.3%	77.6%



Source: 2011 TTS, AM Peak Period Trips

Planned Development and Road Network to 2031

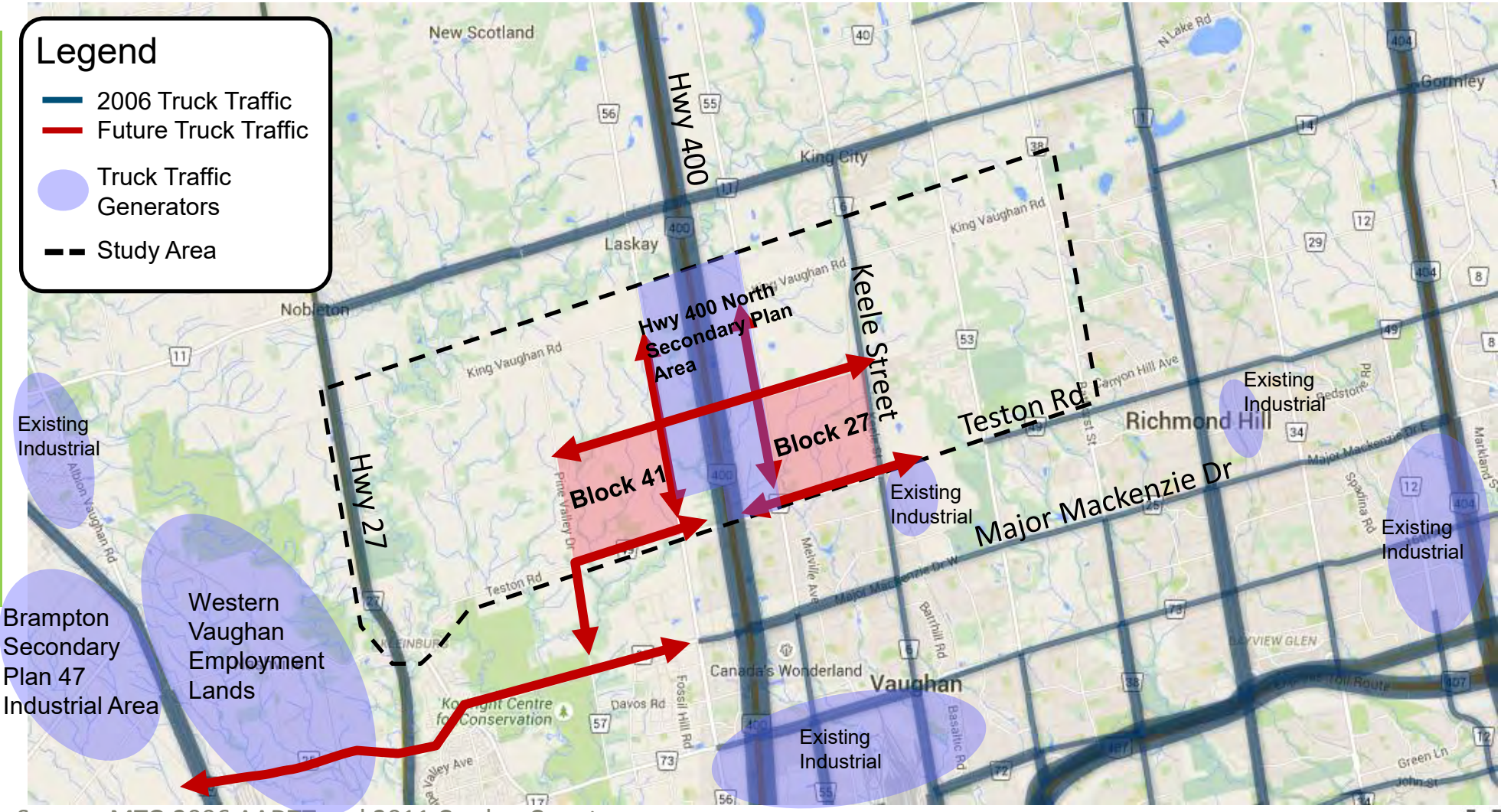


Legend

- Roads
- Railroad
- Watercourse
- Wetland / Waterbody
- Wooded Area
- Environmentally Significant Area
- Conservation Area
- Heritage Agricultural Landscape
- Hwy 400 IC
- Missing Link
- Regional Road
- 2 Lanes
- 4 Lanes
- 6 lanes
- Jogged Intersection
- Planned Road Improvement
- Residential
- Employment

Truck Traffic

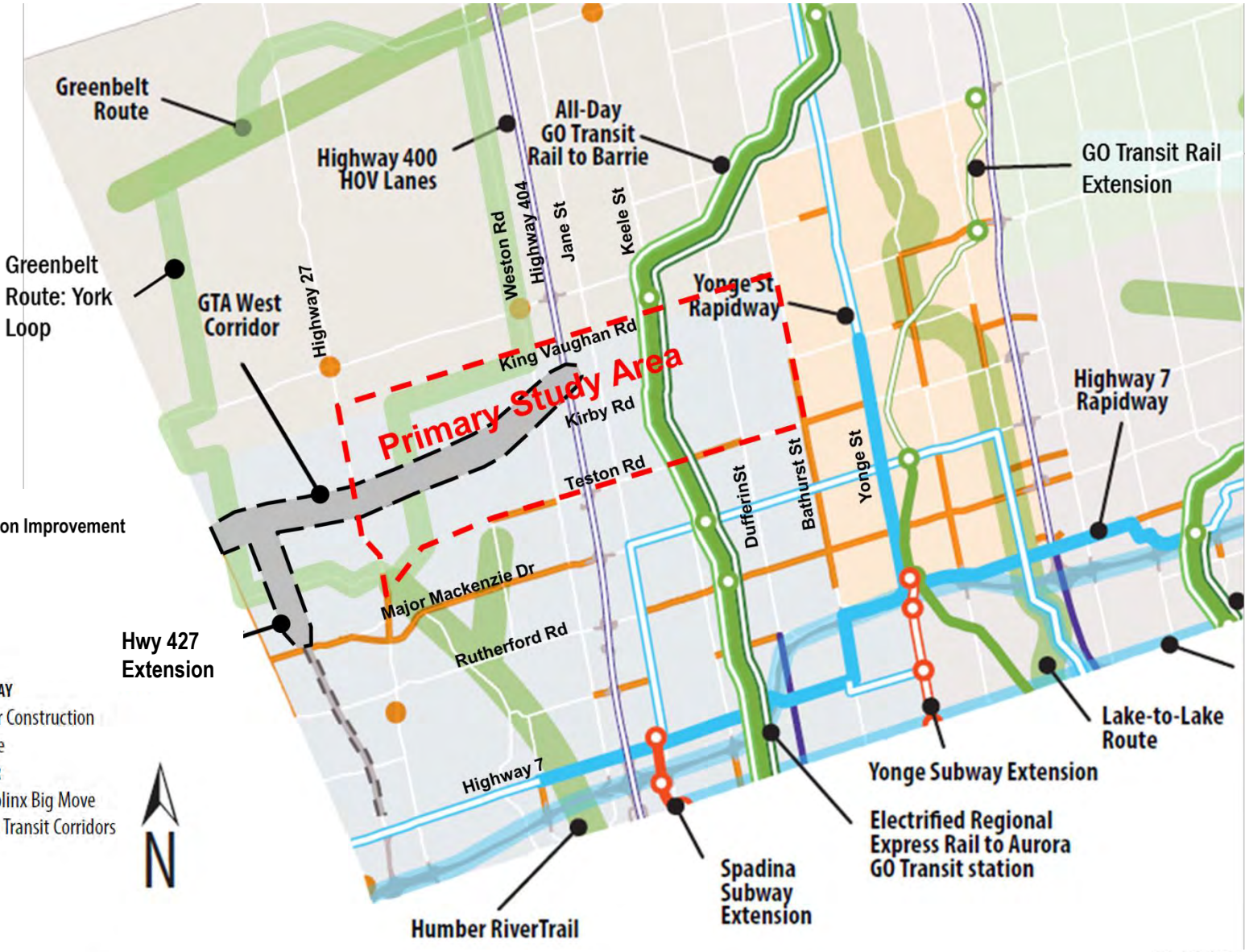
- Hwy 27, Hwy 400, and Keele are major truck routes within the Study Area
- Teston Road is a truck route in the east end of the study area and through the Town of Richmond Hill
- Future east-west connectivity to support new growth areas, truck traffic generators



Source: MTO 2006 AADTT and 2011 Cordon Count program

Regional Transportation Planning Context

- Teston Road EA (ongoing)
- Teston Road Missing Link Individual EA (future)



LEGEND

REGIONAL ROADS & PROVINCIAL HIGHWAYS
- 10-Year Capital Plan Roads Projects
- Existing HOV Lanes
- Potential HOV Lanes
- Future Provincial Highways
- Intersection Improvement

RAPID TRANSIT

YRT/VIVA
- Existing/Committed Rapidways
- Existing/Planned Viva Service

GO TRANSIT
- Existing Commuter Rail
- Future Commuter Rail
- Future All-Day Rail
- Future Regional Express Rail

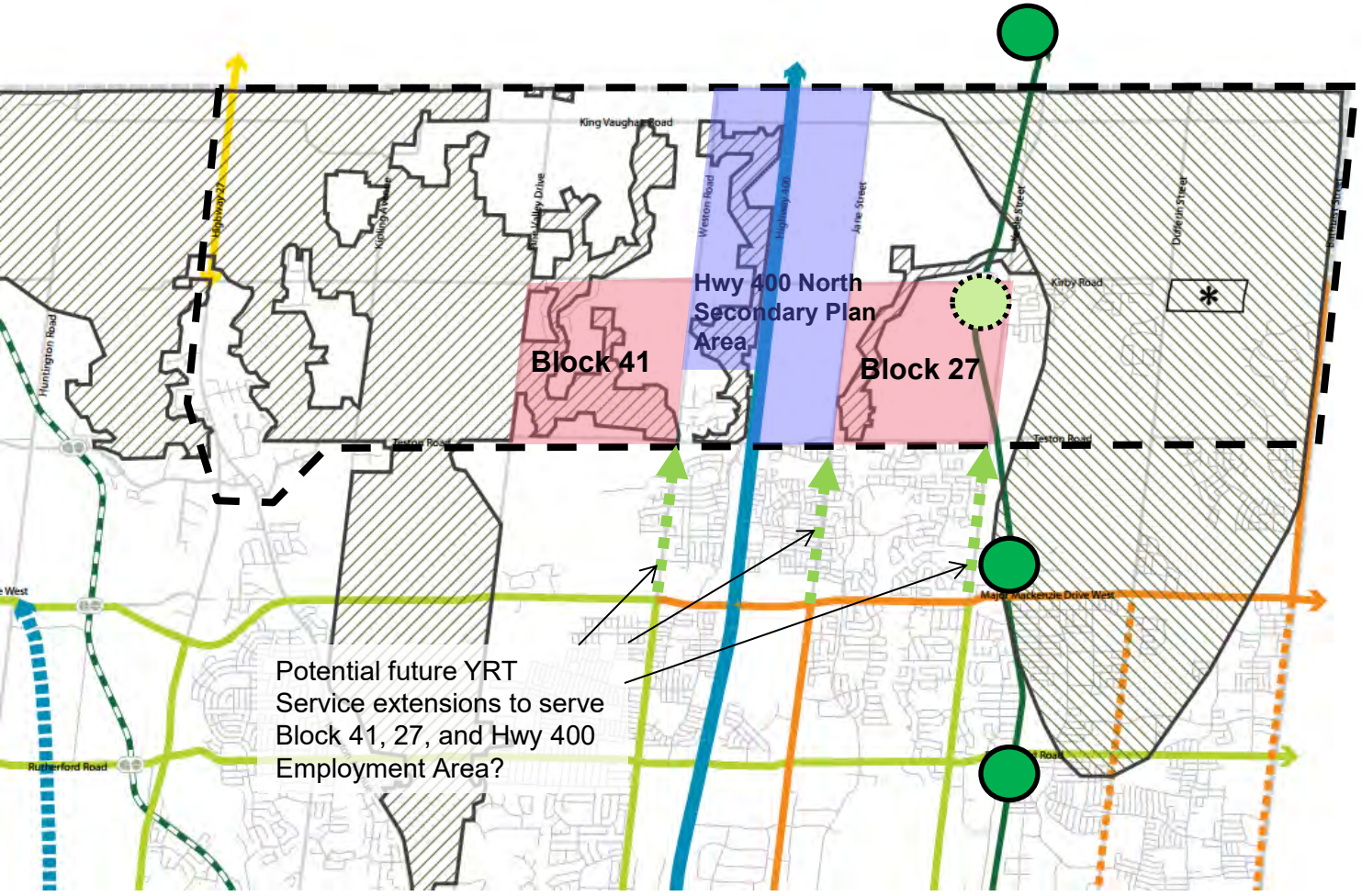
SUBWAY
- Under Construction
- Future

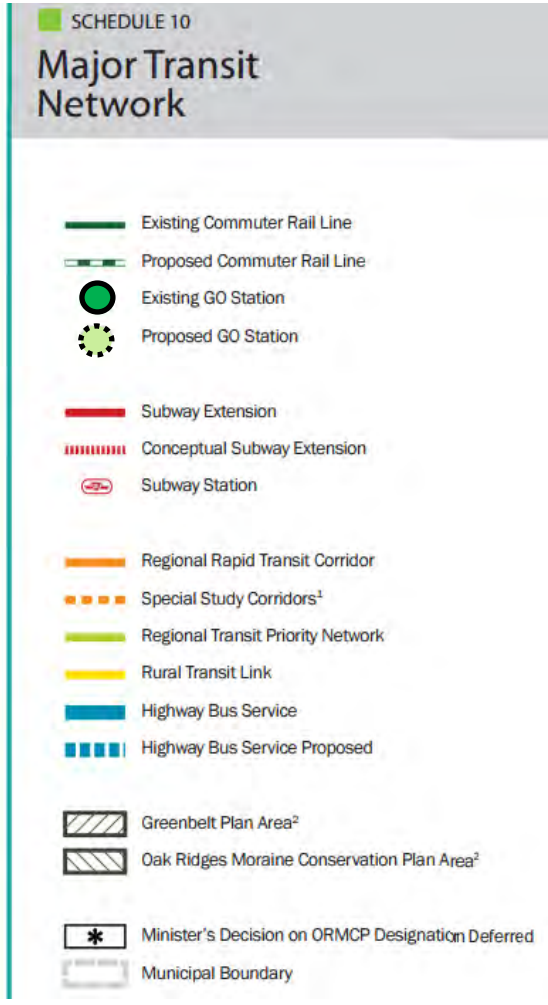
OTHER
- Metrolinx Big Move Rapid Transit Corridors

WALK AND BIKE
- Potential Regional Walk/Bike Spines

Source: York Region TMP Public Open House Display Boards, June 2015

Future Planned Transit Improvements
Metrolinx, YRT





Key Issues Summary Map

Confirm City's position on GTA West alignment and interchange locations to support the North Vaughan Area.

Highway 400 widening north of Teston Road(HOV lanes)

Employment Blocks 34 & 35, Residential Blocks 27 & 41:
- Integrate active transportation network with existing.
- Develop all blocks simultaneously.
- Consistent infrastructure needs for all blocks.
- Regional infrastructure improvements to be coordinated with anticipated development proposals.

King City GO station parking lot expansion?

York Region has identified King-Vaughan or Kirby road as a potential major regional arterial corridor, pending recommended GTA West alignment.

Potential realignment of King Vaughan Road as service road for GTA West corridor.

Partial IC at Weston or full IC at Pine Valley

Impact of GTA West and the Freeway to Freeway IC on potential Highway 400 IC's

EA currently underway for Barrie GO rail line.

Kirby Road EA

Connections to West Vaughan Employment Area and Highway 427 Extension?

Planned bus lanes on GTA West corridor - transit connection between GTA West and Kirby GO Station?

Consider impacts to existing neighbourhoods. Integrate with existing transportation network.

Increased Traffic from GTA West

Teston Road EA underway (HDR).

Access to Vaughan Healthcare Campus

Maple GO station parking lot expansion?

Opportunities to connect to York Region RT network.

Connection to TTC at Vaughan Metropolitan Centre

Major Mackenzie detailed design underway (HDR).

King Road
10th Concession
Nobleton
GTW West Corridor Protection Area (Approximate)
King Vaughan Road
BLOCK 35
Kirby Road
Kipling Avenue Community
Kleinburg
BLOCK 41
BLOCK 34
Rimwood
BLOCK 27
Teston Road
Nashville Road
BLOCK 40/47
Huntington Road
Highway 27
Islington Avenue
Kipling Avenue
Pine Valley Drive
Millwood Woodend
Weston Road
Vellore Woods
Highway 400
Jane Street
Keele Street
Dufferin Street
Bathurst Street
Yonge Street
Bayview Avenue
Major Mackenzie Drive
King City
Mackenzie Ridge
Rizmi Holdings Site
Gamble Road

Legend

- Roads
- Railroad
- Watercourse
- Wetland / Waterbody
- Wooded Area
- Study Area Boundary
- Potential Jurisdictional Transfers
- Urbanization
- York Region Road Improvement
- Potential New Connections
- Transit Priority Corridors
- Planned Rapid Transit Route
- Potential GO Rail Station (Kirby GO Station)
- Existing GO Rail Station
- Rail Grade Separation
- Planned Regional Express Rail (All-day Two-way Service)
- Planned Regional Express Rail (Peak Period One-way Service)
- Jog Elimination
- Potential Highway Interchange
- Potential Freeway-to-Freeway Interchange Zone
- GTA West Short List of Route Alternatives

N W E S

North Vaughan
Transportation Master Plan
Constraints and Opportunities

0 0.75 1.5 3 km

1:50,000

Next Steps / Schedule

- Identification of Alternative Solutions - Fall 2015
- **Community Workshop – Winter 2015/ 2016**
- Stakeholder Workshop #2 – February 2016
- **PIC#2 - Late March 2016**
- Draft Report Summer 2016
- Stakeholder Workshop #3 - Late Summer/Fall 2016
- Final Report Fall/Winter 2016

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North Vaughan and New Communities Transportation Master Plan

How you can provide your input at this PIC?

Station 1:
Sign-in, Welcome, & Context

Station 2:
Future Transportation Vision

Station 3:
Facilitating More Active Transportation

Station 4:
Improving Transit Connections

Station 5:
Enhancing the Road Network

Station 6:
Prioritizing Transportation Infrastructure

Station Discussions until 9PM

We would love to hear from you!

THANK YOU!

Welcome to Public Information Centre #1

October 13, 2015

for

The purpose of this open house is to:

- Learn about the Study and why your input matters
- Share your experiences with the transportation network
- **Public Information Centre #1**
- Provide ideas for today
- Discuss next steps
- Provide ideas for the future

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STATION 1

Sign-in,
Welcome,
&
Context

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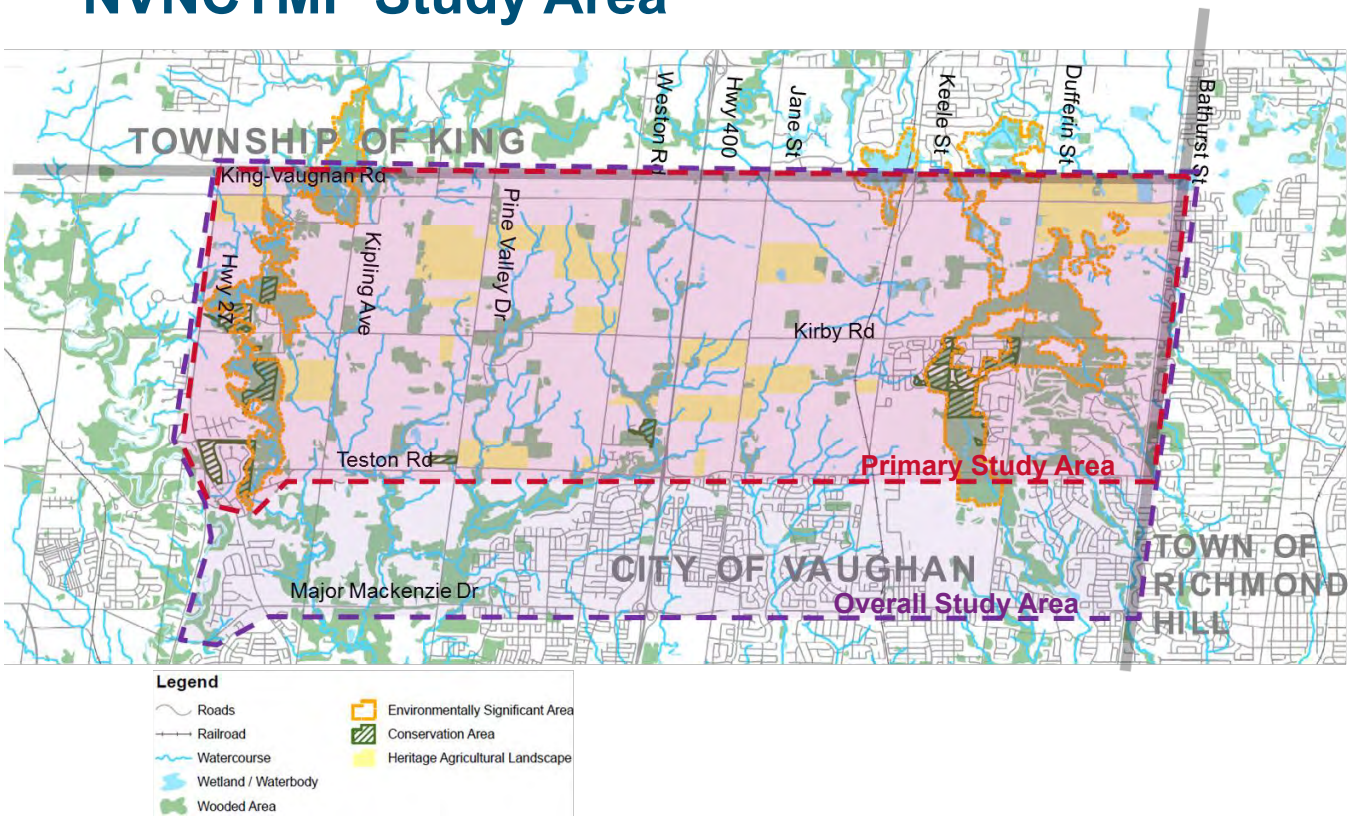
What is a Transportation Master Plan (TMP)?

- A long term (15 to 20 year) plan
- A “road map” to develop a well-integrated, multi-modal, sustainable transportation network
- A guide to make decisions on community transportation issues
- Follows Phase 1 and 2 of the Municipal Class Environmental Assessment Process

NVNCTMP Study Area



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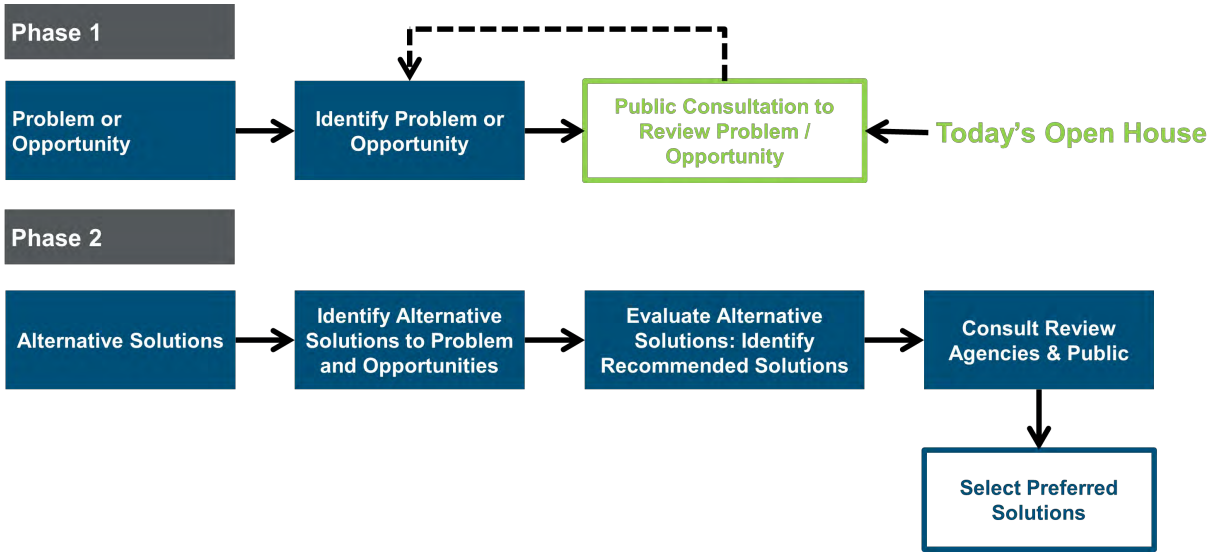
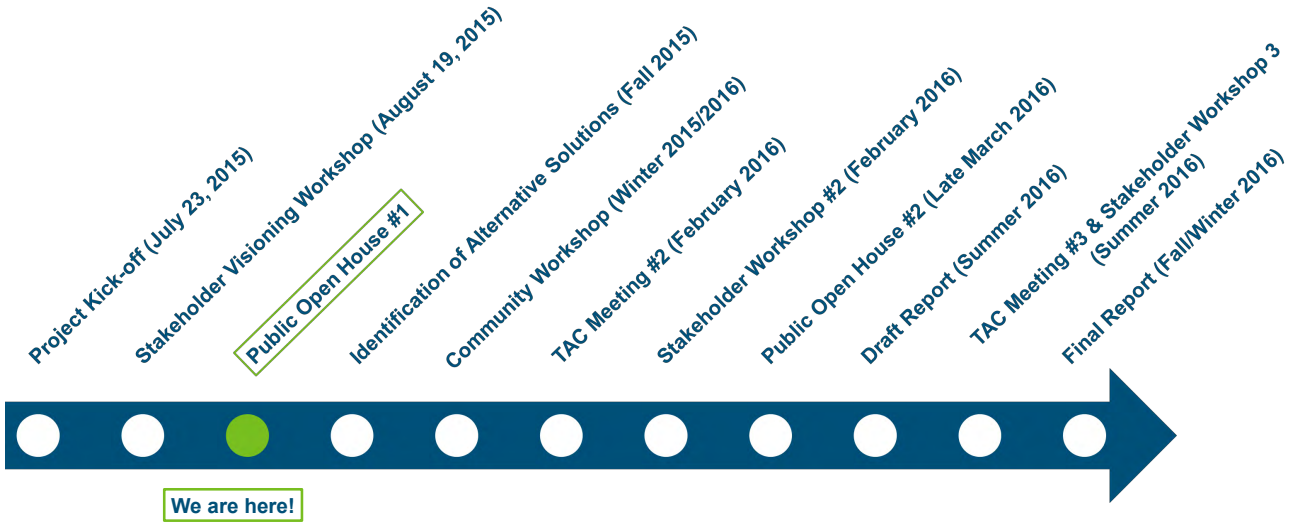
North Vaughan and New Communities Transportation Master Plan

TMP Planning Process?



Where are we in the Study?



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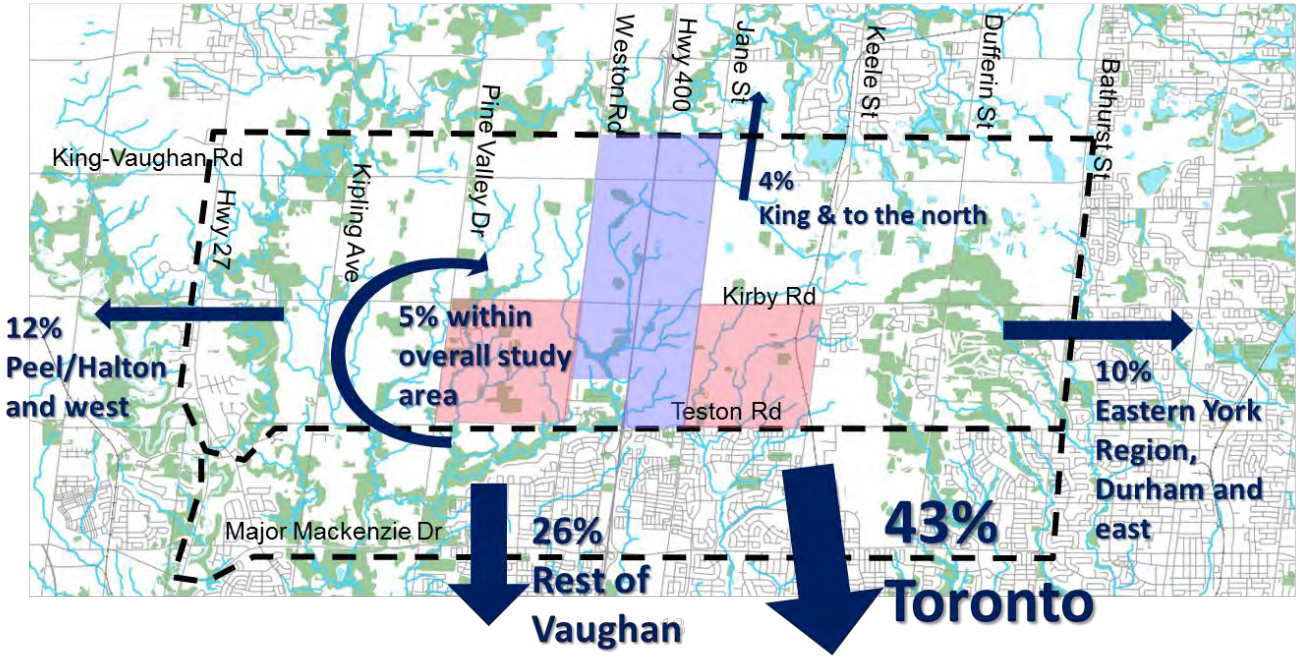
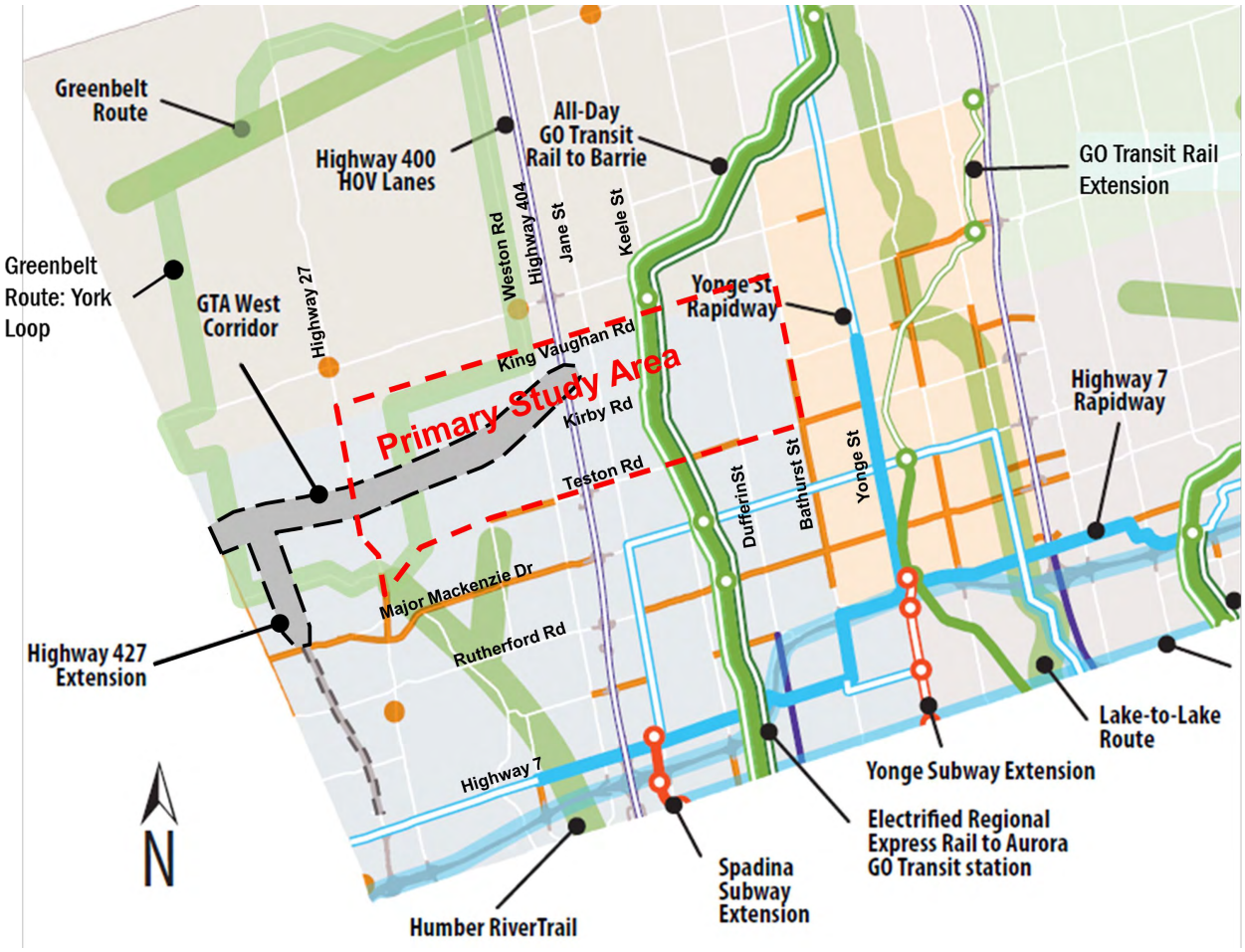
Existing Travel Patterns in North Vaughan



How you get to work:

	North Vaughan	Whole City
Walk	0%	> 1%
Cycle	0%	> 1%
YRT	4%	10%
GO	6%	5%
Carpool	5%	7%
Drive Alone	85%	78%

Regional Transportation Plan



LEGEND

REGIONAL ROADS & PROVINCIAL HIGHWAYS
- 10-Year Capital Plan Roads Projects
- Existing HOV Lanes
- Potential HOV Lanes
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RAPID TRANSIT

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OTHER
- Metrolinx Big Move Rapid Transit Corridors

WALK AND BIKE
- Potential Regional Walk/Bike Spines

Source: York Region TMP Public Open House Display Boards, June 2015

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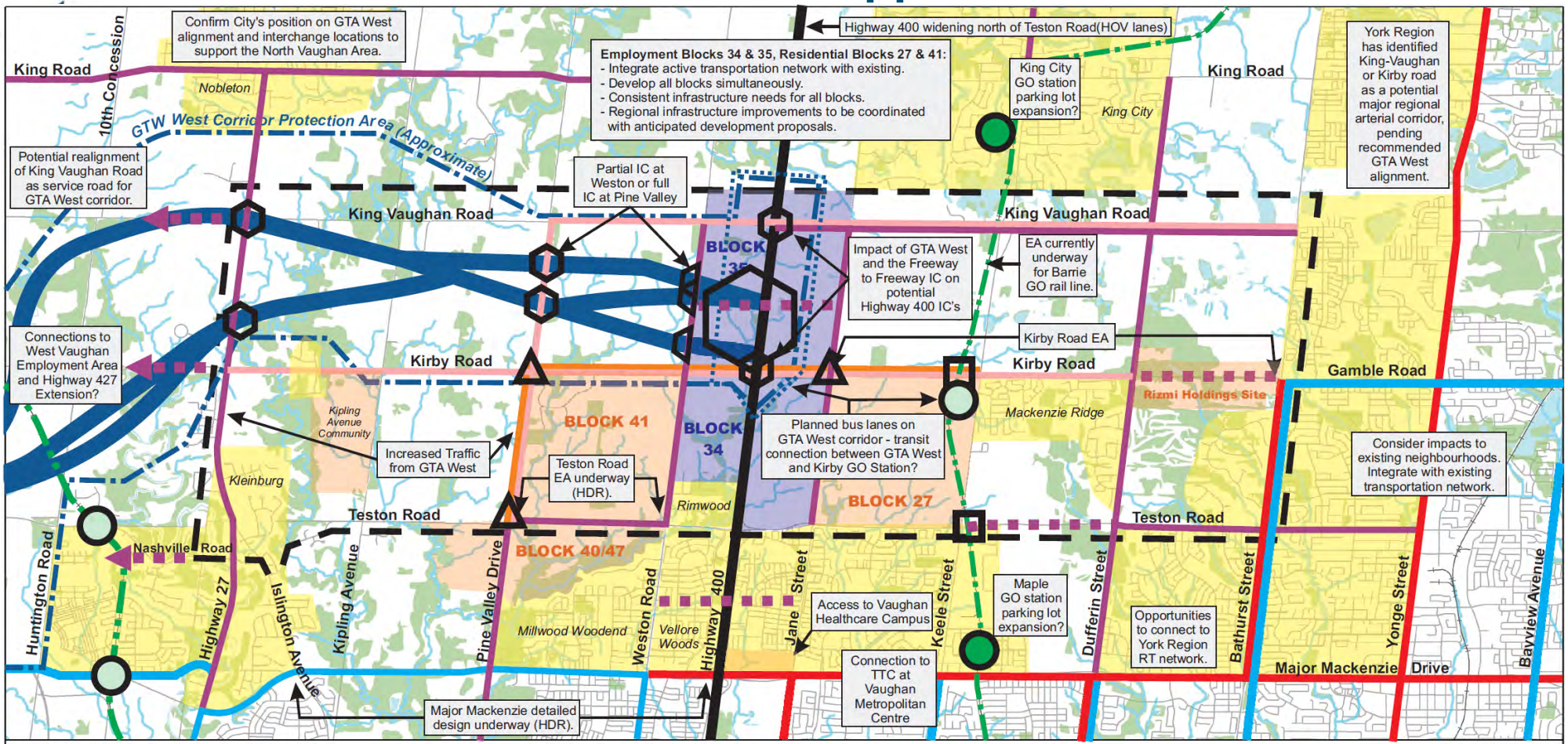
Constraints and Opportunities



STATION 2

Your Vision for Transportation

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Key words/phrases that best describe your vision for the future of transportation in North Vaughan?

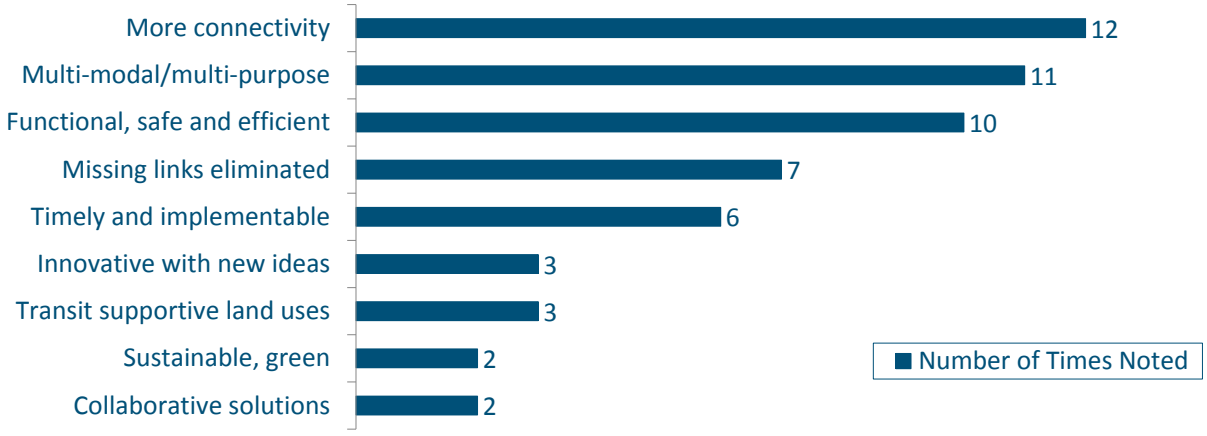
Key opportunities that you feel should be considered to support growth and development of North Vaughan and New Communities?

Key issues/challenges in the Study Area that you would like to have considered?

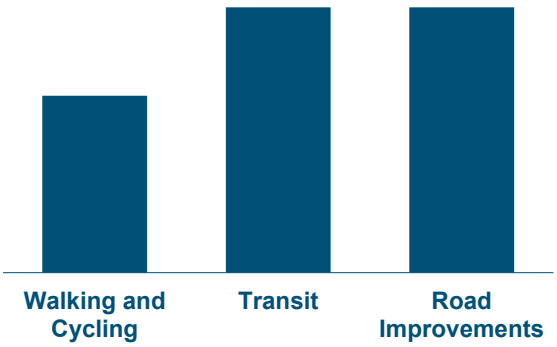
What we heard at Stakeholder Workshop #1

(August 19, 2015)

What key words or phrases describe your **vision** for transportation in North Vaughan?



How would you prioritize Transportation Infrastructure?



Key Opportunities

- **Improve connectivity**; particularly to Highway 400 and future GTA West Corridor
- Create an interconnected 24 hour **transit network**
- Integrate **multi-use pathways** and cycling
- Don't just plan for it, **build it**

Key Challenges

- Existing community **buy-in and support**
- Protecting the **Environment**
- Changing current **travel behaviour**
- **Slow implementation** and **financial** impediments

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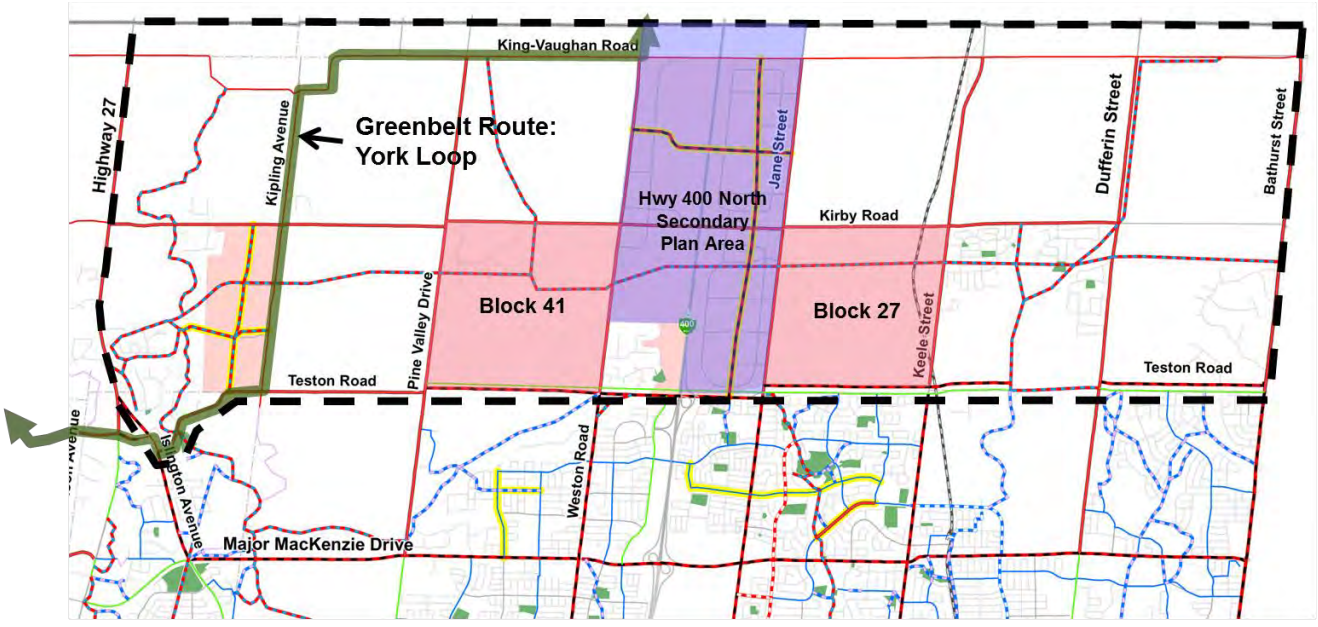
North Vaughan and New Communities Transportation Master Plan

STATION 3

Facilitating more Active Transportation



Legend

Class 1 Multi-use Recreation or Boulevard Pathway
- Community Multi-use Recreational Pathway
- Neighbourhood Multi-use Recreational Pathway
- Community Multi-use Boulevard Pathway

Class 2 Bike Lane/Paved Shoulder/Sidewalk
- Community Bike Lane - Formal pavement markings and signing (CL - NO WIDENING)
- Community Bike Lane - Formal pavement markings and signing (CL - WIDENING)
- Neighbourhood Bike Lane - Formal pavement markings and signing (NL - NO WIDENING)
- Neighbourhood Bike Lane - Formal pavement markings and signing (NL - WIDENING)
- Community Paved Shoulder Bikeway - Signed as Bike Route

Class 3 Bicycle Signed Route/Sidewalk
- Neighbourhood Signed Bike Route - No formal facility or pavement markings
- Community Signed Bike Route - No formal facility or pavement markings

Class 4 Trail Facility
- Foot Path/Hiking Trail

TMP Additional Bike Facilities
- Proposed Network Additions to 2007 Pedestrian and Bicycle Master Plan

VAUGHAN

HDR

North Vaughan and New Communities Transportation Master Plan

What challenges exist for walking/cycling as a way to get around?

Walking

Cycling

VAUGHAN

HDR

North Vaughan and New Communities Transportation Master Plan

What opportunities would you like to see explored to make it easier to walk/cycle as a way to get around?

Walking

Cycling

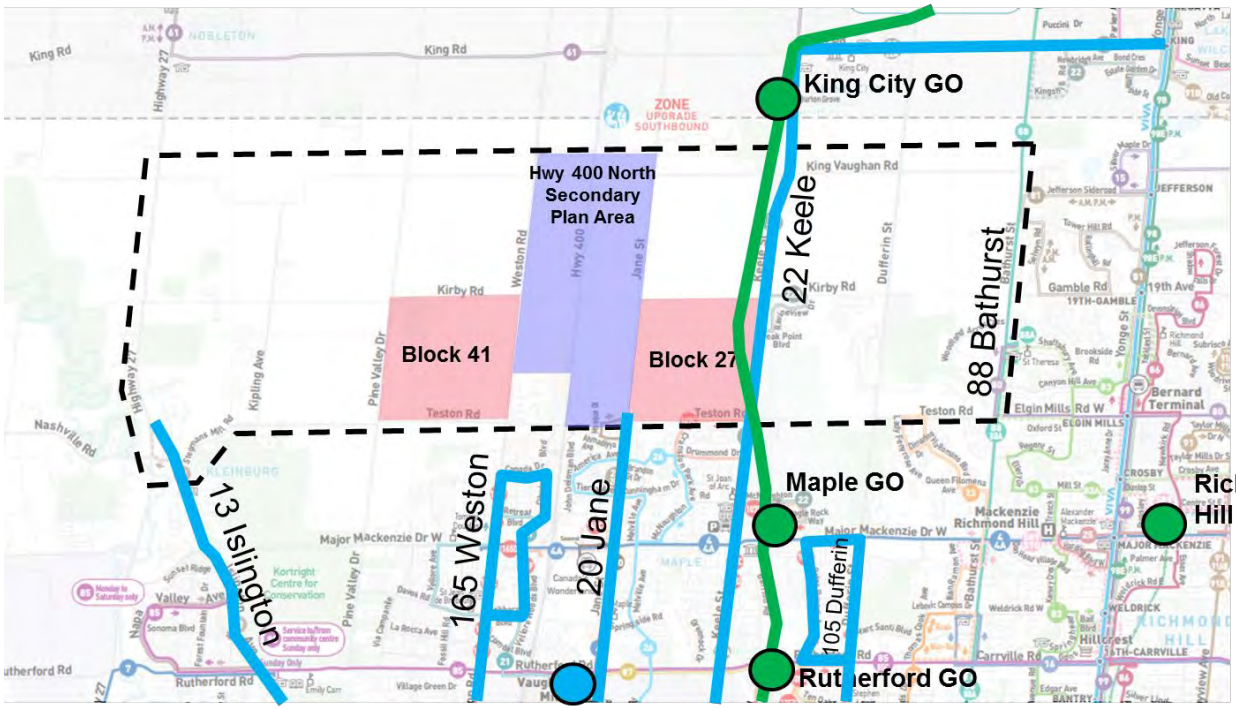
VAUGHAN

HDR

North Vaughan and New Communities Transportation Master Plan

STATION 4

Improving Transit Connections



VAUGHAN

HDR

How important is improving transit to you?

NOT IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT

VAUGHAN

HDR

North Vaughan and New Communities Transportation Master Plan

What key destinations would you take transit to? Please list.

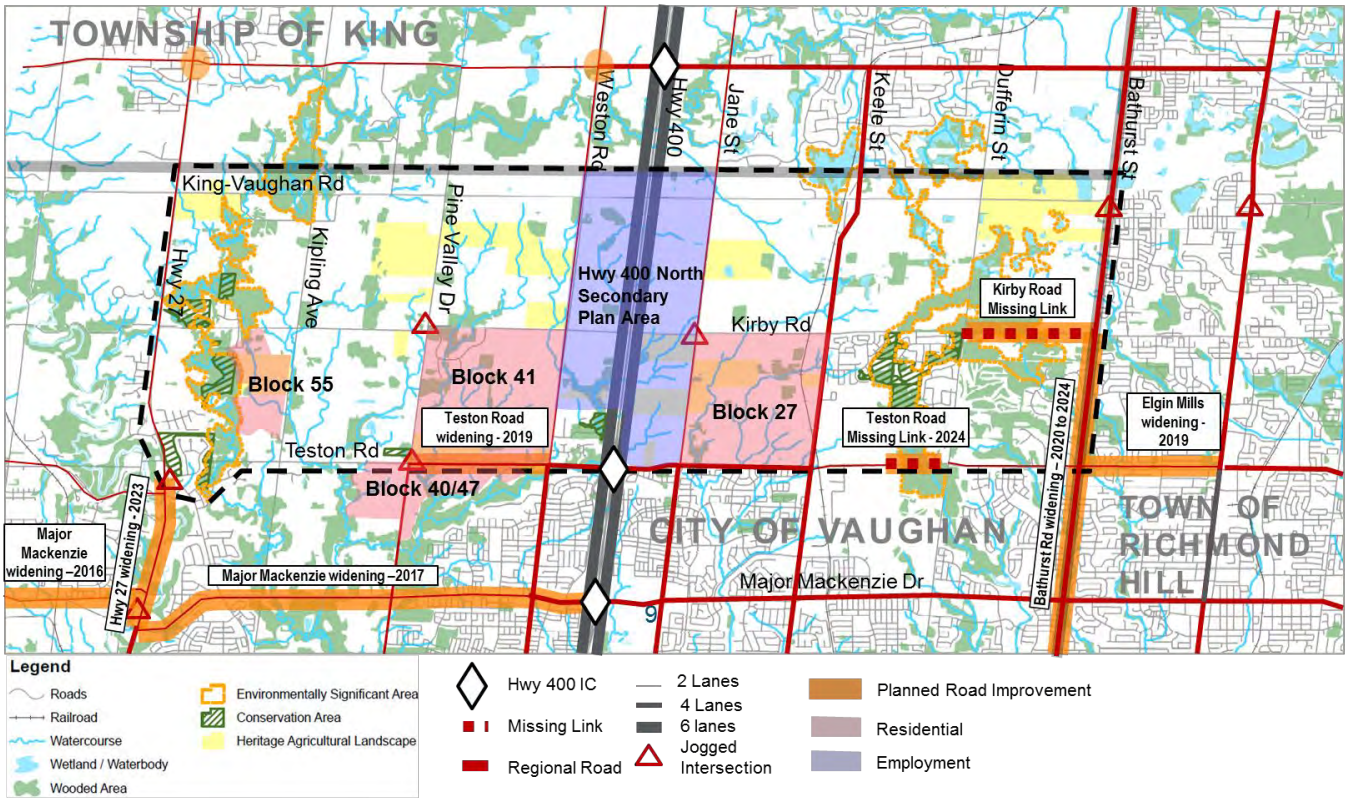
Transit

Finish this sentence:
“I would take transit if … ”

North Vaughan and New Communities Transportation Master Plan

STATION 5

Enhancing the Road Network



VAUGHAN

HDR

North Vaughan and New Communities Transportation Master Plan

What is working well with the existing transportation road network?

North Vaughan and New Communities Transportation Master Plan

What challenges would you like to see addressed? (specific locations and overall)

VAUGHAN

HDR

What ideas do you have for improving our roadways, intersections and connections?

VAUGHAN

HDR

STATION 6

Prioritizing Transportation Infrastructure

VAUGHAN

HDR

Place one or more popsicle sticks in a box to indicate how you would prioritize each mode of transportation.

Car | Transit | Walk | Cycle

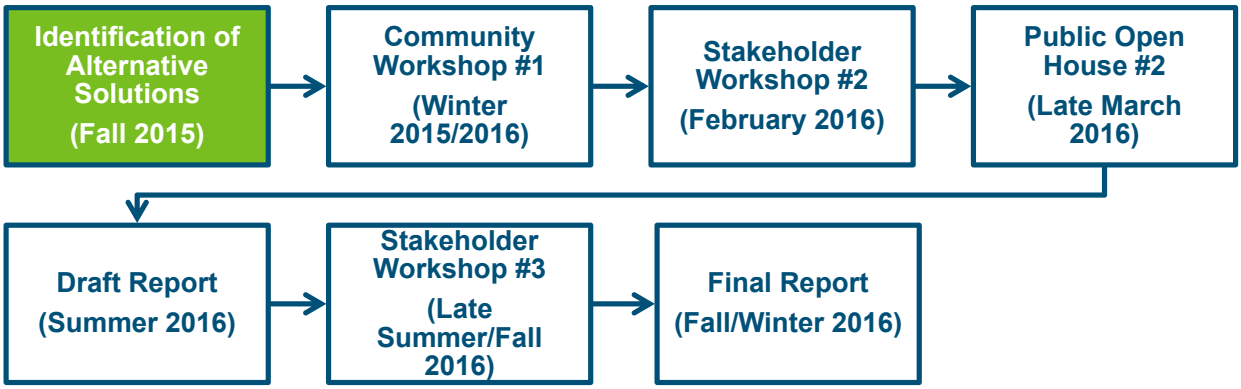
Other comments/ideas for supporting a multi-modal transportation network?

VAUGHAN

HDR

THANK YOU

Next Steps



Contact Us!

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Infrastructure Planning Services
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Vaughan, ON L6A 1T1
Phone: 905-832-8585 Ext. 8192
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Tyrone Gan, P. Eng.
Consultant Project Manager
HDR Corporation
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Richmond Hill, ON L4B 1J8
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VAUGHAN

HDR

Appendix C6

PIC#2 Materials

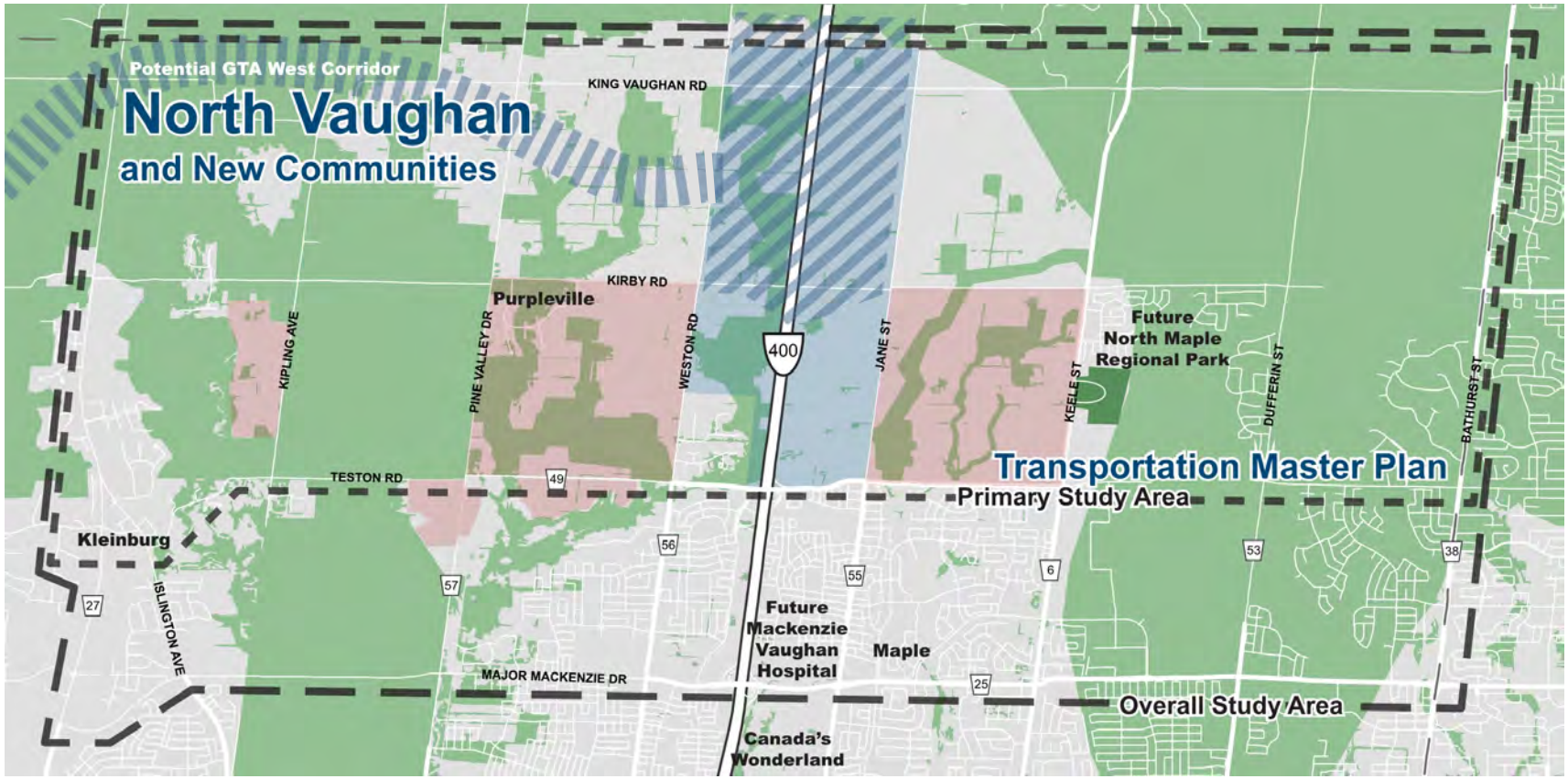
Welcome to

Public Information Centre 2

April 5, 2017

VAUGHAN

HDR



North Vaughan and New Communities TMP

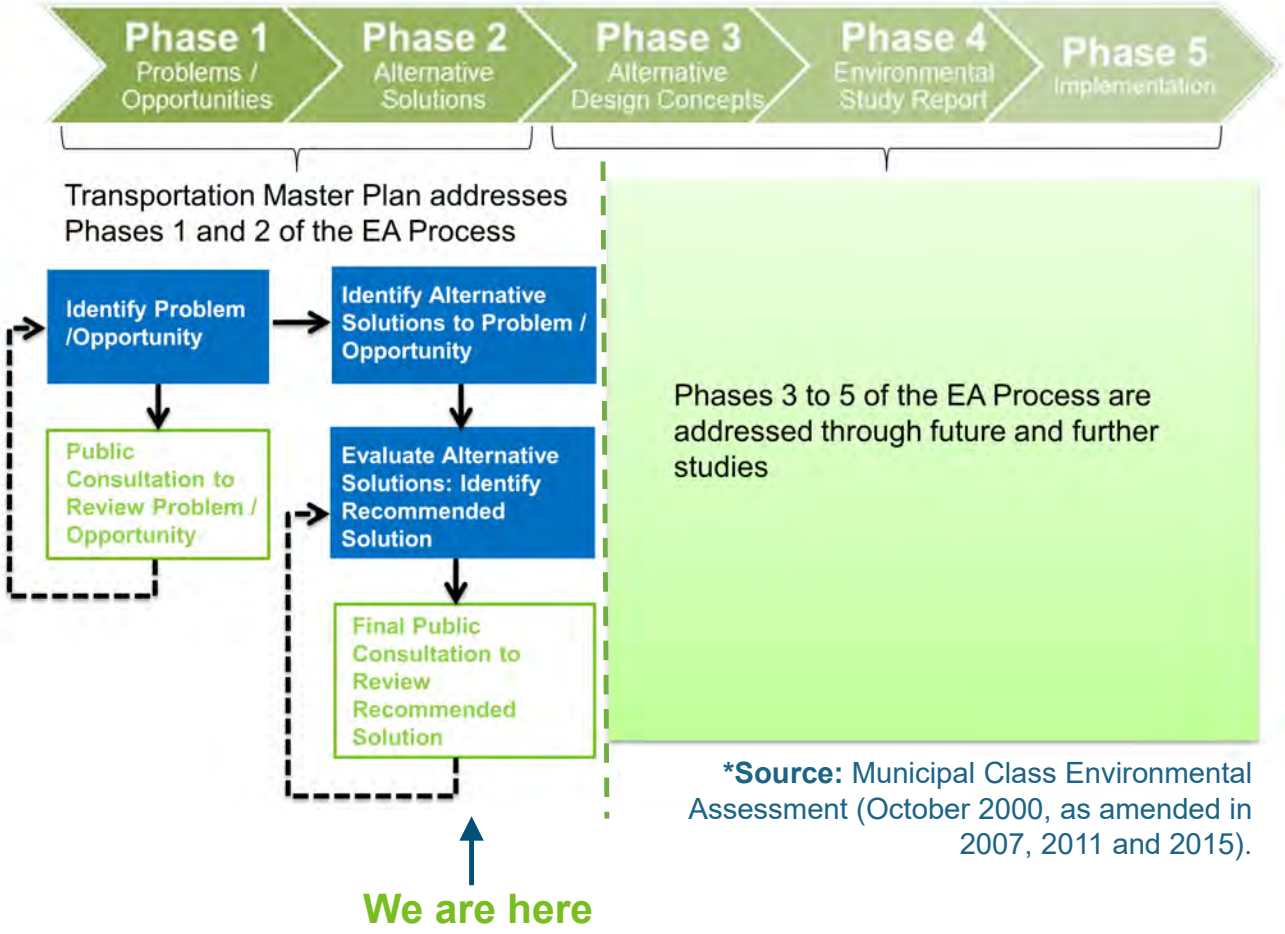
Station 1

Background Information

What is a Transportation Master Plan?

- A long term (15 to 20 year) plan
- A “road map” to develop a well-integrated, multi-modal, sustainable transportation network
- A guide to make decisions on community transportation issues
- Follows Phase 1 and 2 of the Municipal Class Environmental Assessment (EA) Process

The Environmental Assessment Process*



***Source:** Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015).

Purpose

- Support **all modes** of travelling
- Connect **people to places**
- Inclusive **public consultation**
- Support future **land uses**
- Support and promote **employment** opportunities
- Support establishment of **Kirby GO Station**

What we heard

Challenges

- Existing traffic congestion
- Limited east-west connections
- Transit linkages
- Access to trails
- Cycling and walking connections across Hwy 400
- Environmental features

Opportunities

- Kirby and Teston connections
- Integrate active transportation connections with environmental features

Ideas for Improvement

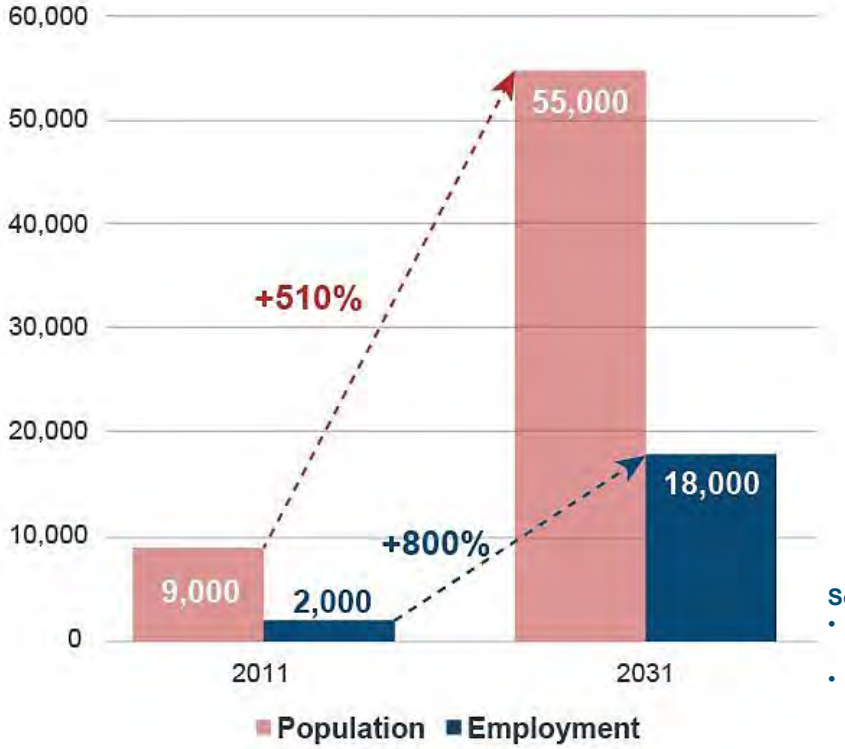
- More designated / separated bike facilities
- Improved transit service to key destinations
- Crosswalks on Regional Roads
- Improved east-west road capacity

Prioritizing Infrastructure

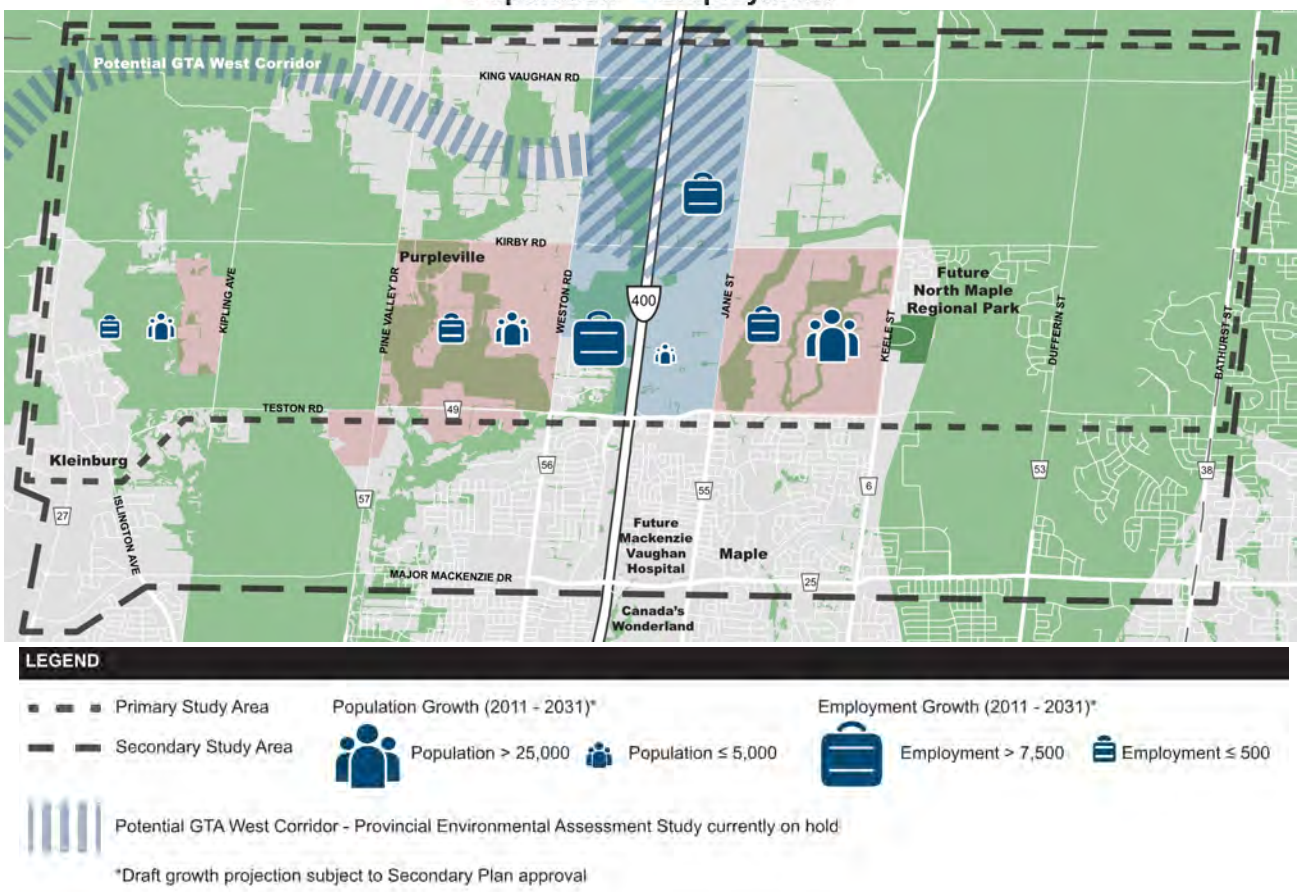
- Balanced priority for **all travel modes**

Planned Growth

The Study Area is expected to grow by approximately **46,000 people** and **16,000 jobs** between 2011 and 2031



Sources:
- York Region Draft 45% Intensification Scenario
- Block 27 and Block 41 Draft Secondary Plan Forecasts



Problem and Opportunity Statement

There is a need for **capacity** and **operational improvements** for all travel modes

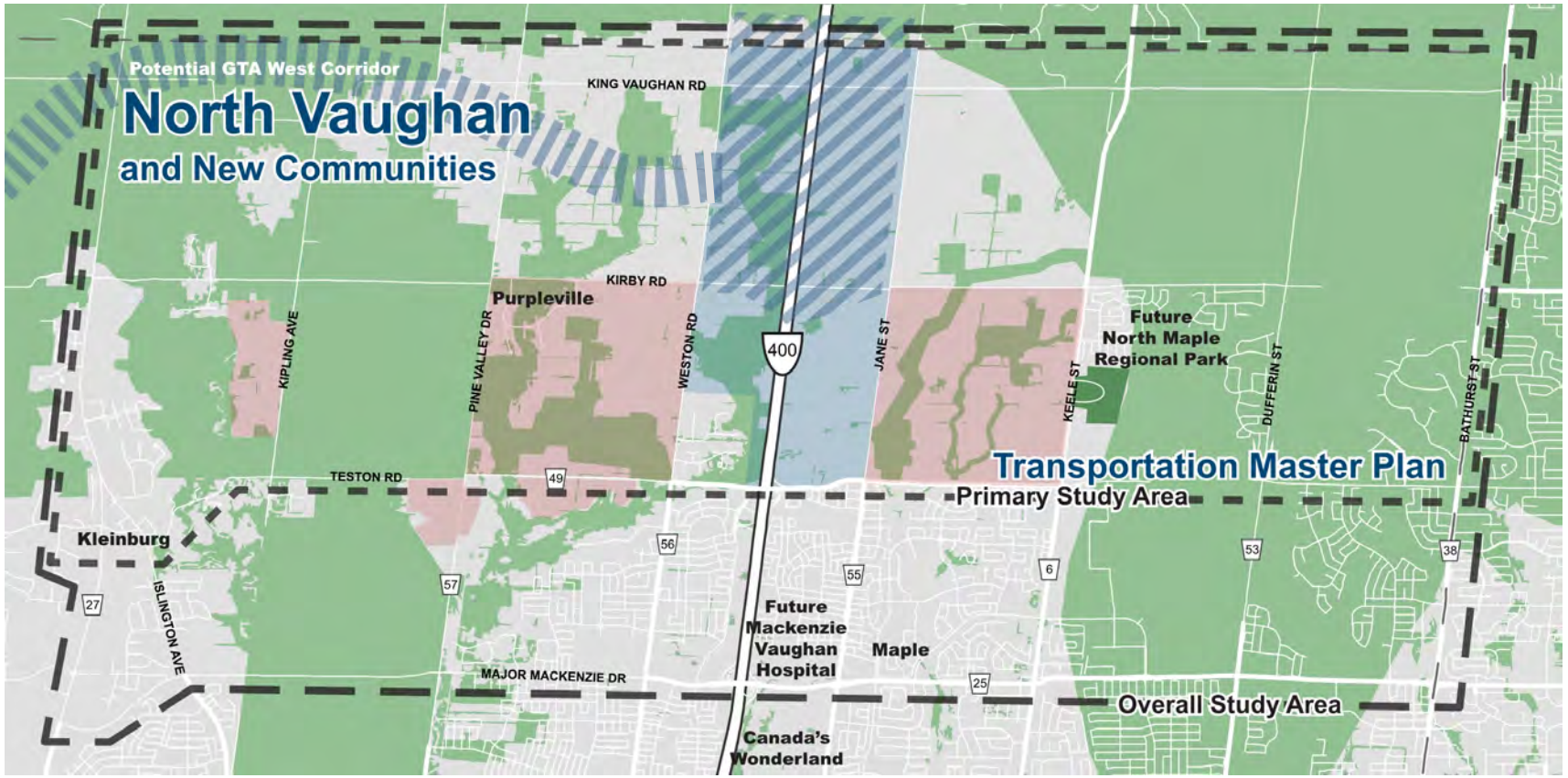
In today's network, there are several **gaps** in the road network, **limited** active transportation facilities, and **limited** transit service.

Without any improvements to the transportation network in the Study Area, **there will be increased travel delays** for all road users.

North Vaughan and New Communities areas are expected to grow by approximately **46,000 people** and **16,000 jobs** by 2031.

Opportunities exist to provide **improved connectivity** by **bridging gaps**, **eliminating jogs**, and **expanding transit service**.

The existing pedestrian, cycling, and road networks can be **improved** and **better integrated** into the overall transportation network.



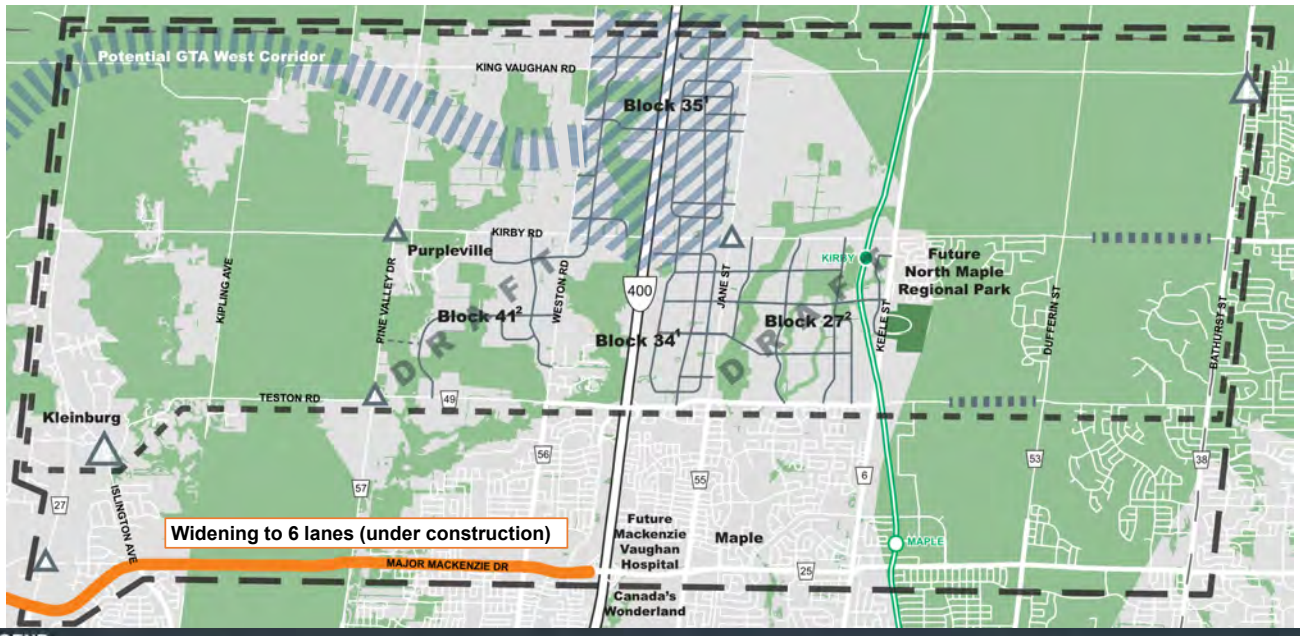
North Vaughan and New Communities TMP

Station 2

Network Alternatives and Evaluation

2031 Network Alternative #1 – Do Nothing

Alternative 1 = Today's Network + Under Construction Improvements + Future Growth to 2031



LEGEND

- 2 Lanes
- 4 Lanes
- 6 Lanes
- Road Capacity Improvement
- Jogged Intersection
- Missing Link
- Block Plan Collector Network
- City of Vaughan Boundary
- Primary Study Area
- Secondary Study Area
- Proposed Active Transportation Connection
- GO Rail Service
- GO Rail Station
- Future GO Rail Station
- Potential GTA West Corridor Provincial Environmental Assessment Study currently on hold

1 As per approved Secondary Plan
2 Subject to Secondary Plan approval

Note: Block 41 draft road network supporting emerging land use concept presented at City's Committee of the Whole Working Session January 18, 2016

2031 Network Alternative #2 – York Region TMP Recommended Improvements

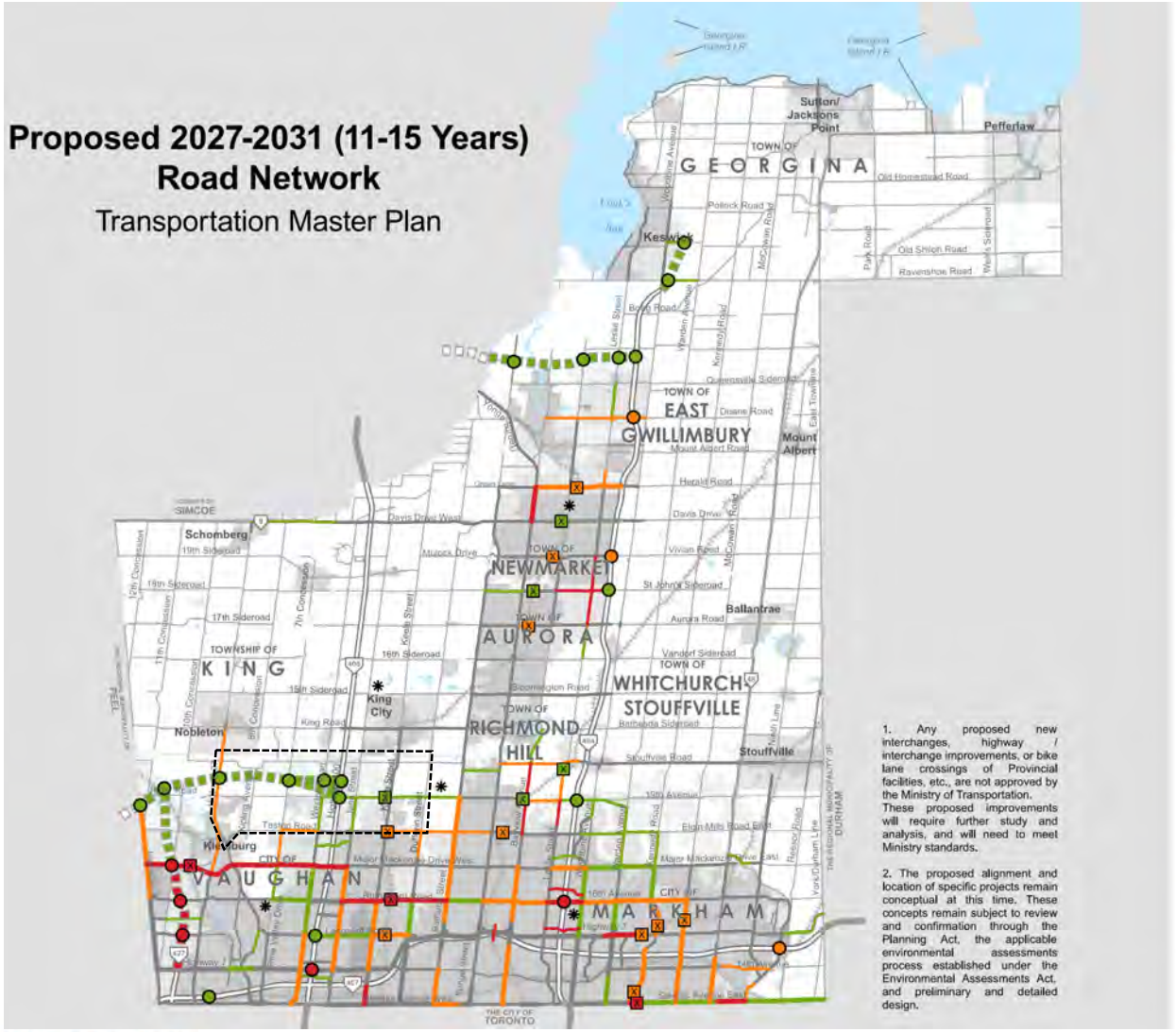
LEGEND

- 2 Lanes
- 4 Lanes
- 6 Lanes
- Road Capacity Improvement
- Block Plan Collector Network
- Frequent Transit Network
- Proposed Active Transportation Connection
- Jogged Elimination
- GO Rail Station
- Future GO Rail Station
- Grade Separated Crossing
- New Interchange on Existing Freeway
- Viva Rapidway
- Planned Regional Express Rail (All Day 2-Way)
- City of Vaughan Boundary
- Primary Study Area
- Secondary Study Area
- Potential GTA West Corridor - Provincial Environmental Assessment Study currently on hold

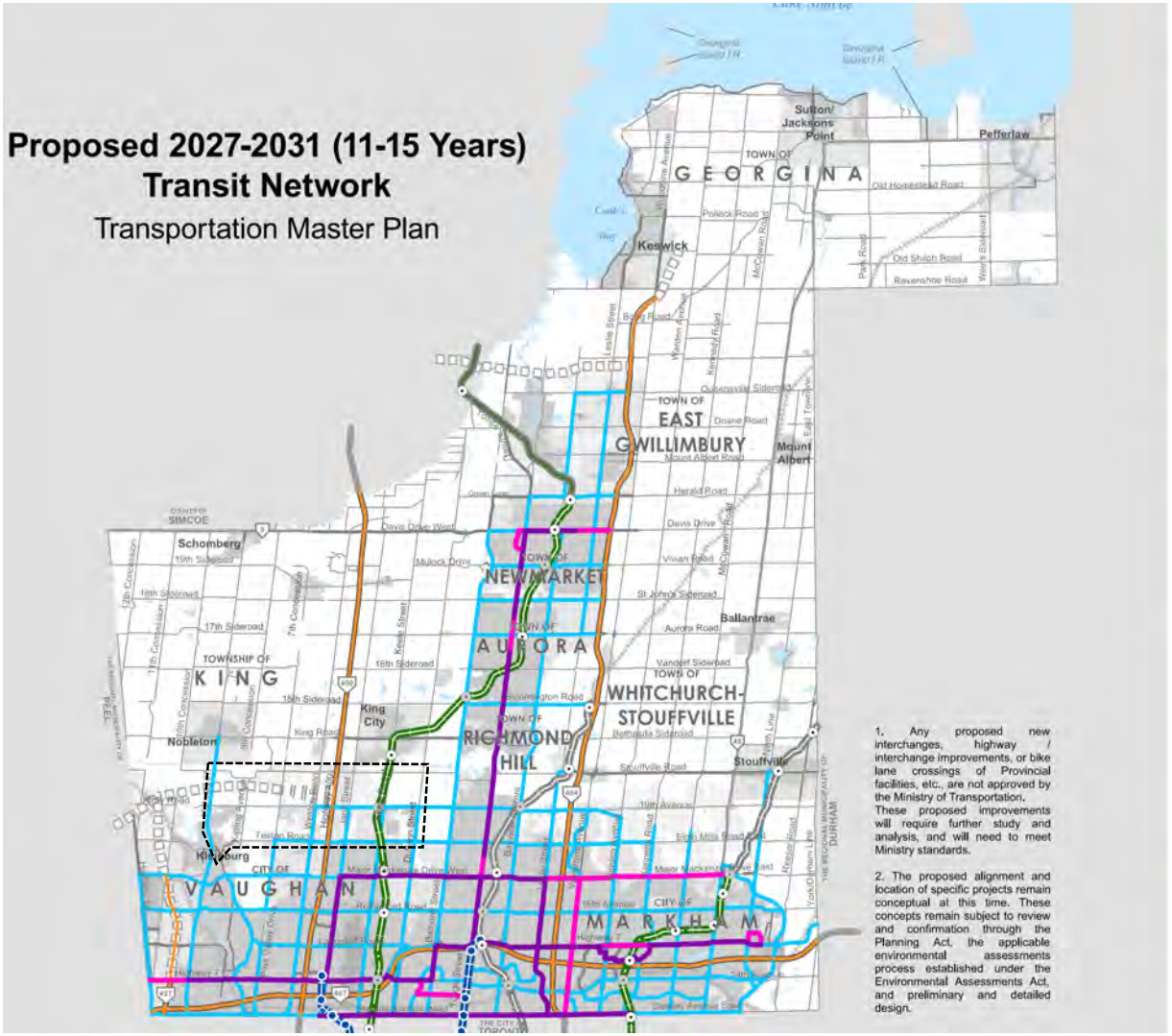
1 As per approved Secondary Plan
2 Subject to Secondary Plan approval

Note: Block 41 draft road network supporting emerging land use concept presented at City's Committee of the Whole Working Session January 18, 2016

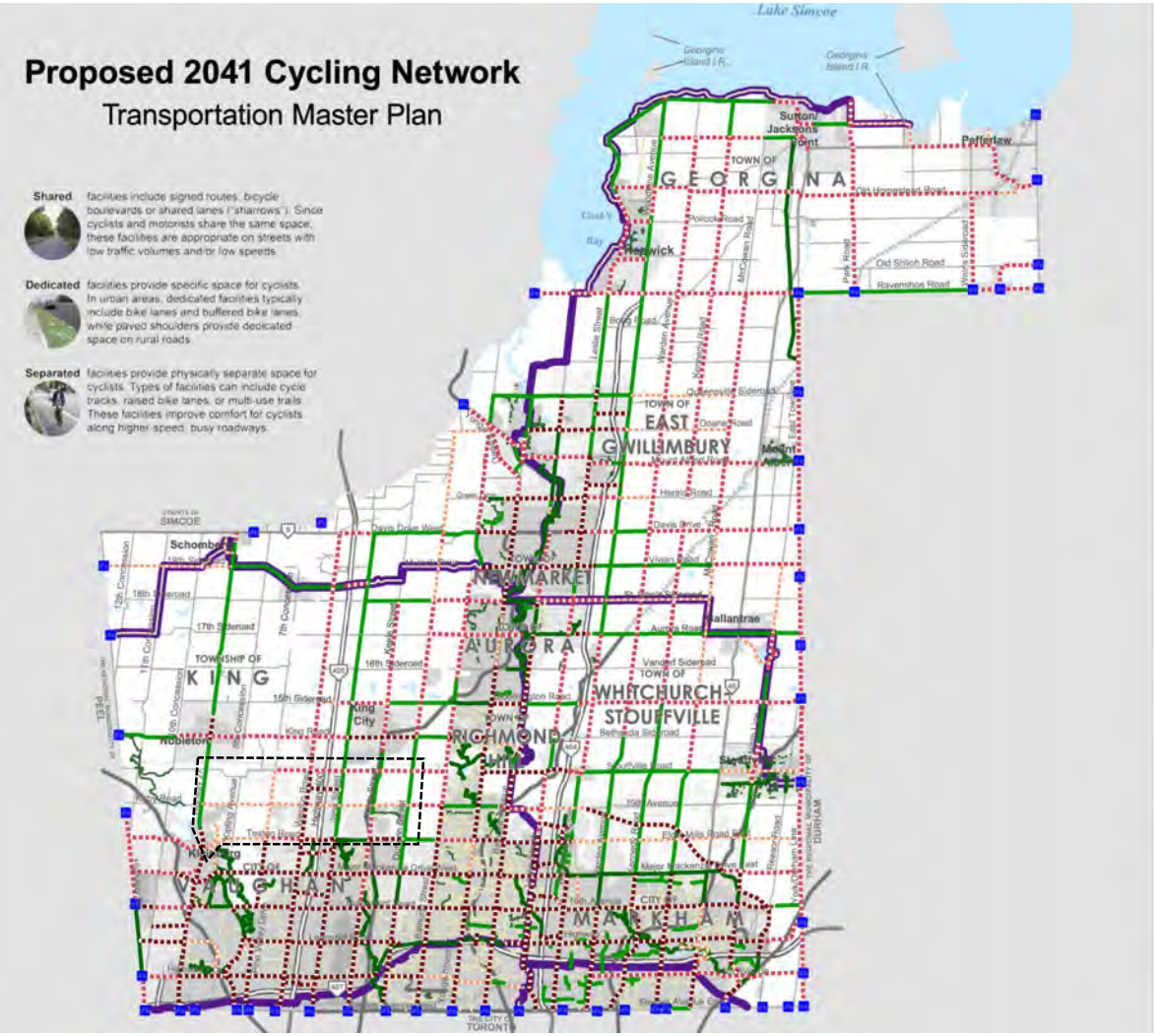
York Region Transportation Master Plan 2031 Road Network



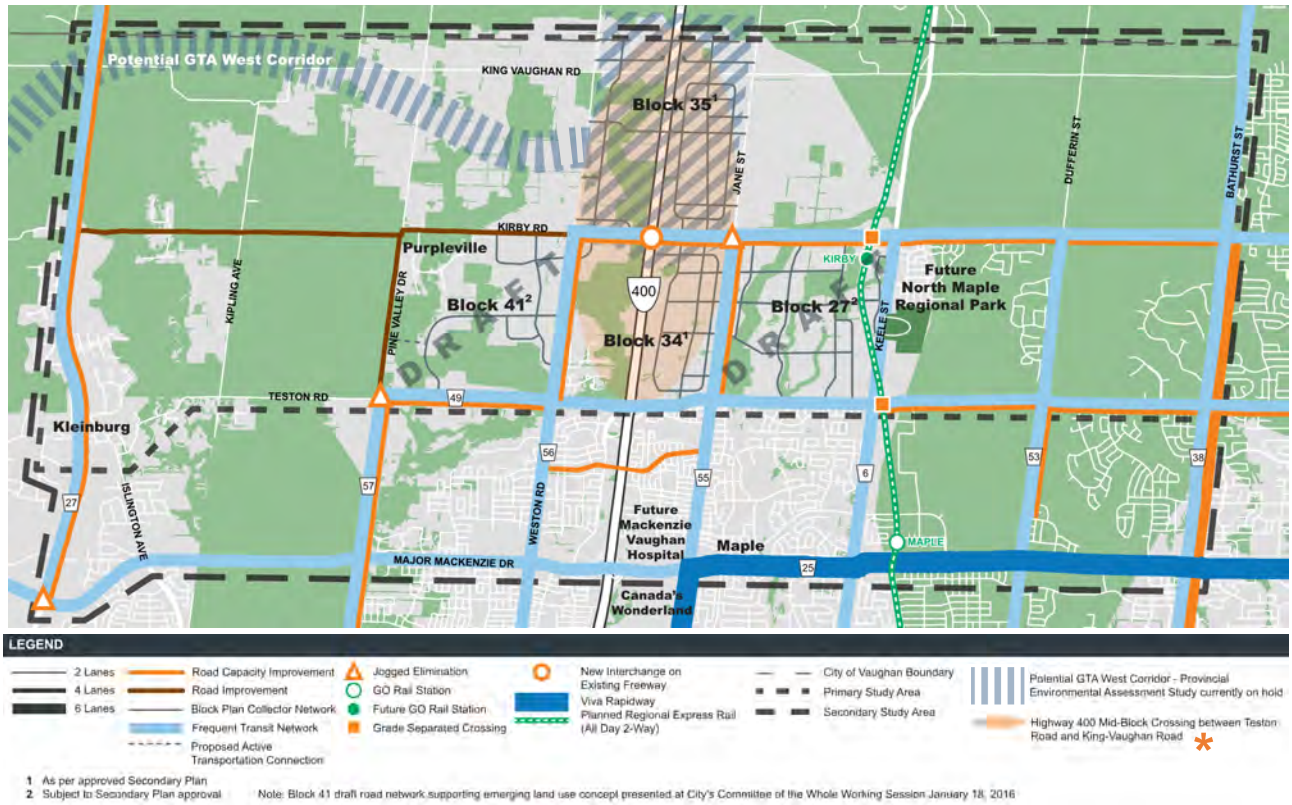
York Region Transportation Master Plan 2031 Transit Network



York Region Transportation Master Plan 2041 Cycling Network

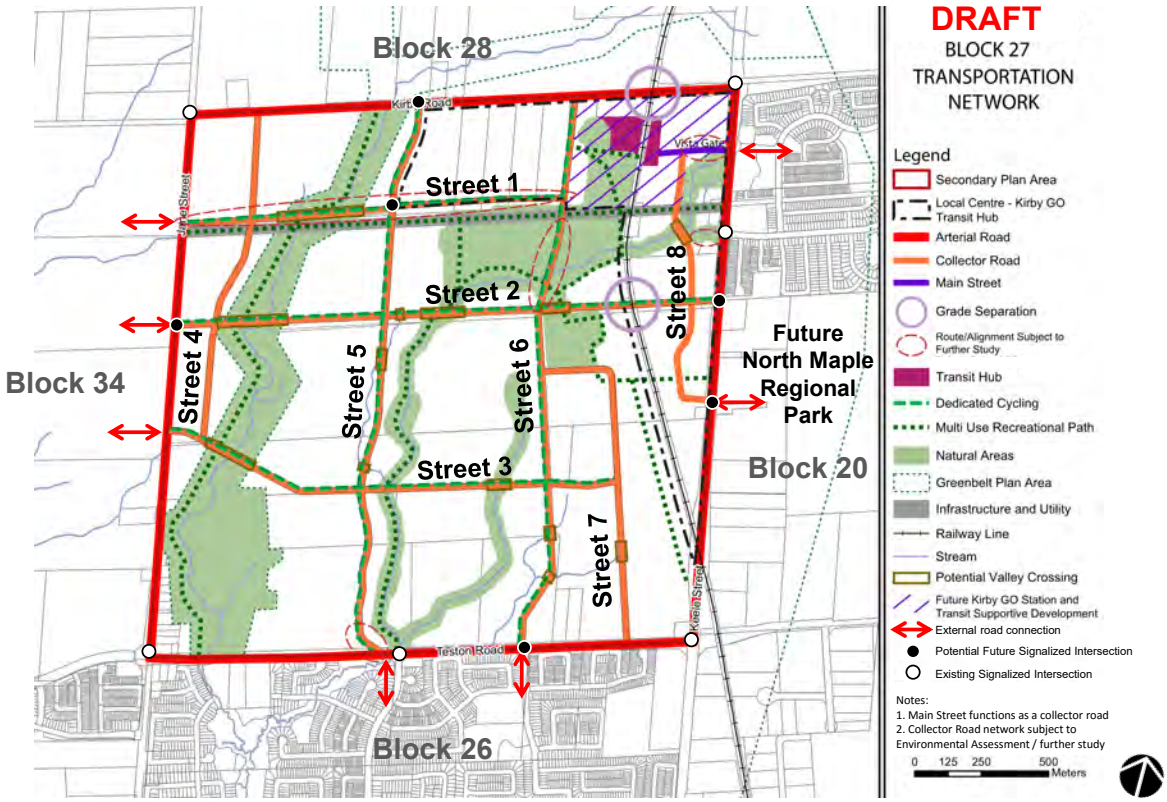


2031 Network Alternative #3 – Alternative 2 plus Localized Improvements



* Minimum of one mid-block crossing between Teston Road and King-Vaughan Road is recommended Subject to further EA study and completion of the GTA West Corridor EA Study

Block 27 Recommended Road Network



Note: Block 27 Recommended Road Network subject to Secondary Plan approval

Evaluation of Alternatives - Criteria

Transportation

- Pedestrian and bicycle friendly neighbourhoods
- Ensures efficient movement of people and goods
- Promotes accessibility for all travel modes to all land uses and for users of all ages and abilities
- Promotes reliable and convenient transit

Natural Environment

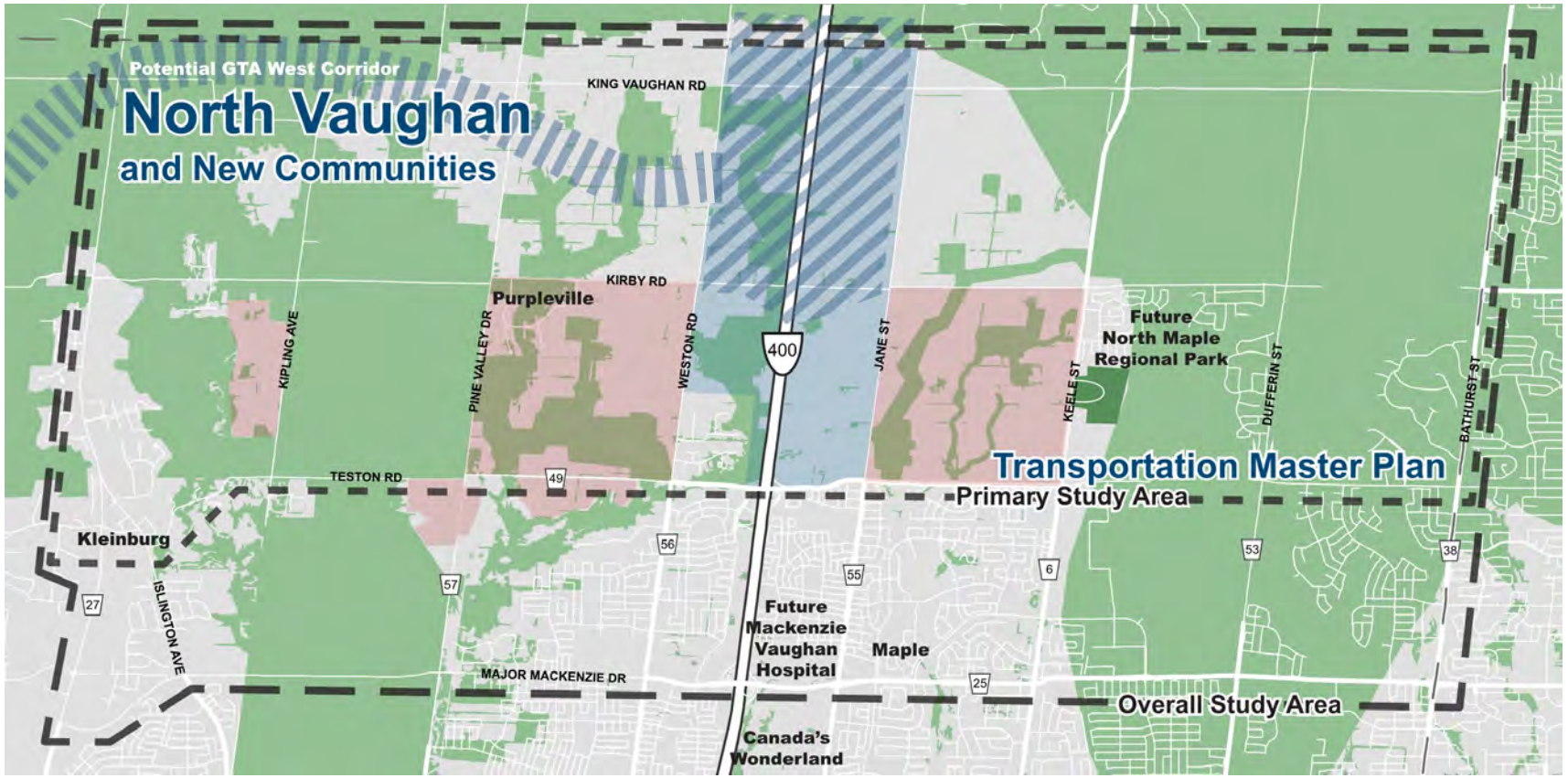
- Impacts on natural vegetation, wildlife, and aquatic habitats
- Impacts on surface water and groundwater
- Impacts on air quality from vehicle exhaust emissions
- Mitigate climate change impacts

Socio-Economic Environment

- Support growth of the new community areas by maximizing accessibility and minimizing congestion
- Minimizes impacts on existing neighbourhoods

Cost and Implementation

- Minimizes maintenance and operational costs
- Minimizes construction costs
- Feasible to construct
- Solution is in-line with provincial, regional, municipal planning documents
- Acceptable to other stakeholders, agencies

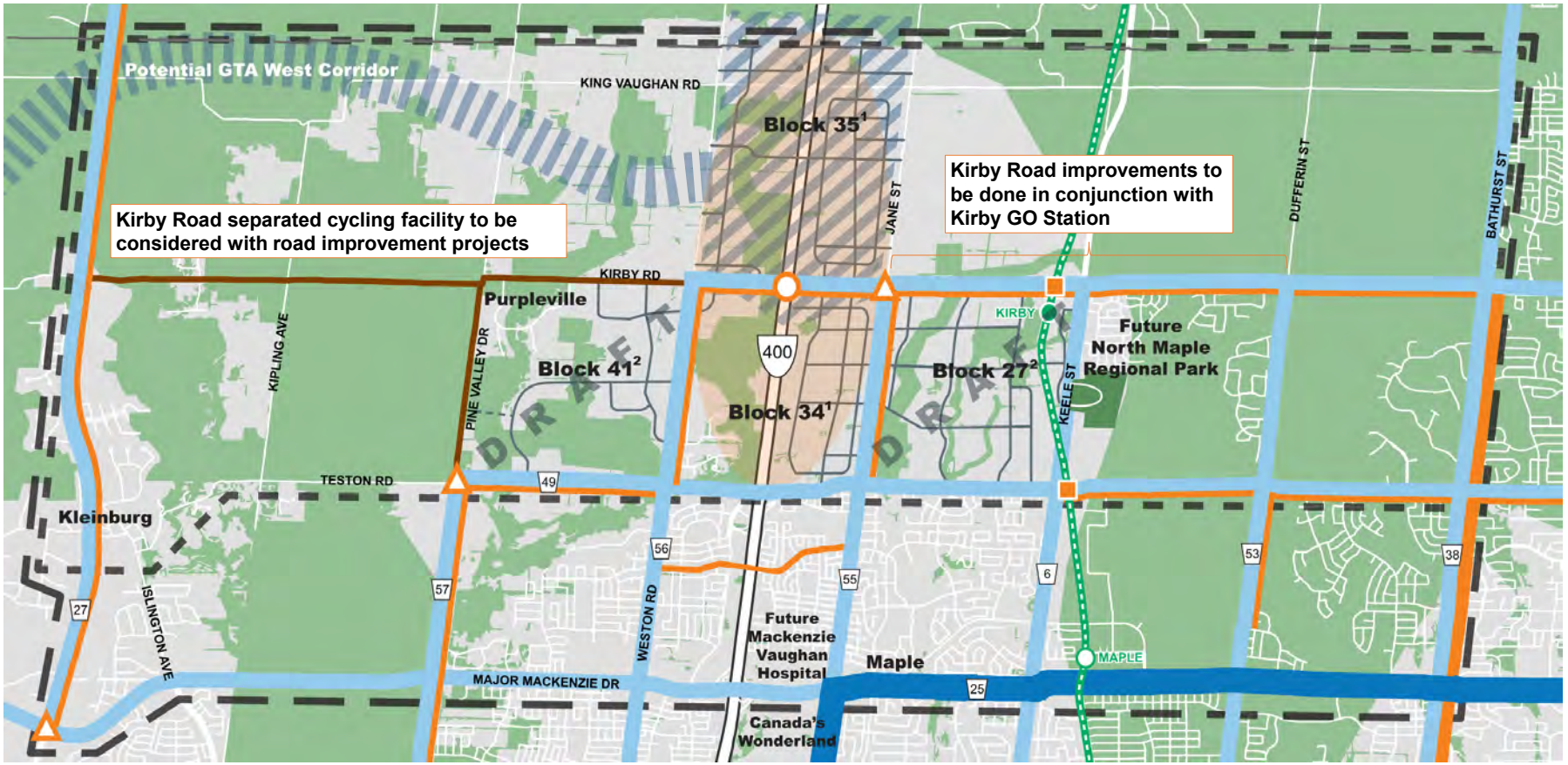


North Vaughan and New Communities TMP

Station 3

Preferred Network

2031 Recommended Network



LEGEND

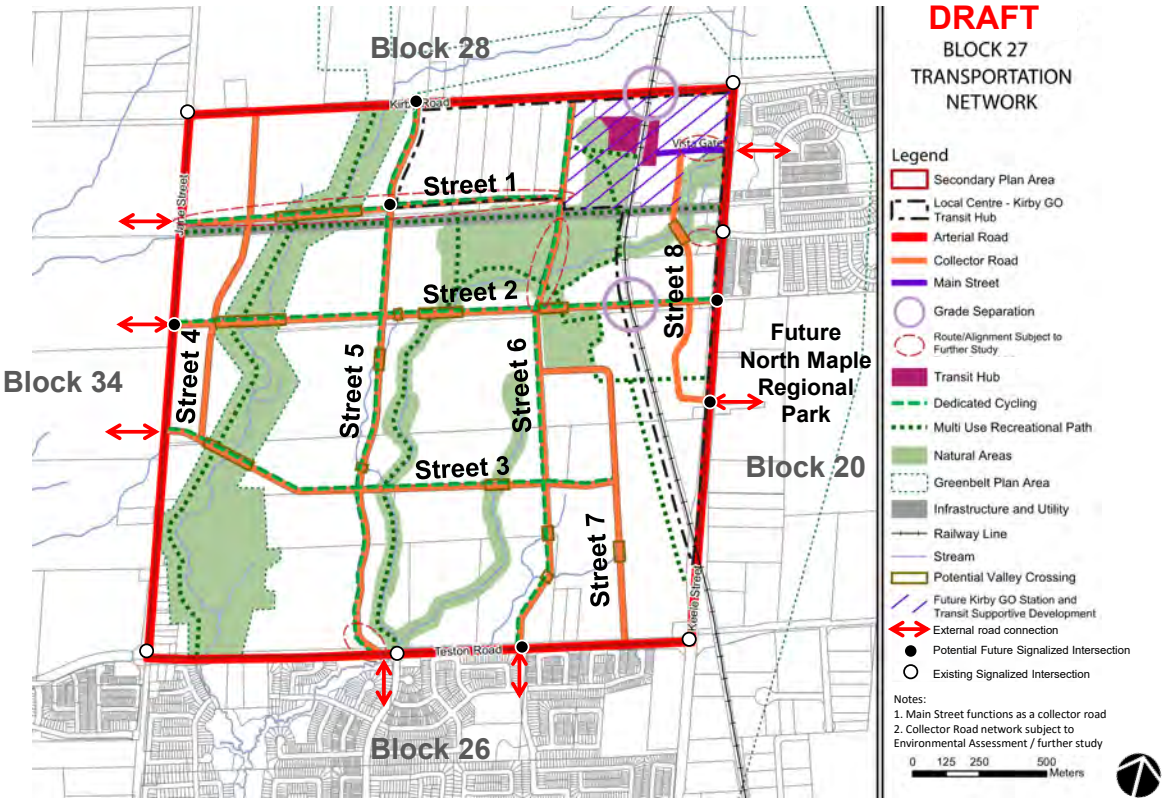
- 2 Lanes
- 4 Lanes
- 6 Lanes
- Road Capacity Improvement
- Road Improvement
- Block Plan Collector Network
- Frequent Transit Network
- Proposed Active Transportation Connection
- Jogged Elimination
- GO Rail Station
- Future GO Rail Station
- Grade Separated Crossing
- New Interchange on Existing Freeway
- Viva Rapidway
- Planned Regional Express Rail (All Day 2-Way)
- City of Vaughan Boundary
- Primary Study Area
- Secondary Study Area
- Potential GTA West Corridor - Provincial Environmental Assessment Study currently on hold
- Highway 400 Mid-Block Crossing between Teston Road and King-Vaughan Road *

1 As per approved Secondary Plan
2 Subject to Secondary Plan approval

Note: Block 41 draft road network supporting emerging land use concept presented at City's Committee of the Whole Working Session January 18, 2016

* Minimum of one mid-block crossing between Teston Road and King-Vaughan Road is recommended Subject to further EA study and completion of the GTA West Corridor EA Study

Block 27 Recommended Road Network



Street ID	Description
Street 1	One of four east-west collector roads in Block 27. Serves lands north of the TransCanada Pipeline with a connection at Jane Street and the planned collector road in Block 34 to north-south collector roads in Block 27 (Streets 4, 5, and 6)
Street 2	One of four east-west collector roads in Block 27. Critical connection and only one which provides a continuous route across the Block from Jane Street to Keele Street. Direct connection to planned collector road in Block 34 at Jane Street, north-south collector roads in Block 27 (Streets 4, 5, 6, and 8), and the Future North Maple Regional Park on the east side of Keele Street. Grade separated crossing of Barrie GO Rail line provides access between the Kirby GO Transit Hub Local Centre and the rest of Block 27.
Street 3	One of four east-west collector roads in Block 27. Serves the lands between Street 2 and Teston Road. Connects to planned collector road in Block 34 at Jane Street and north-south collector roads in Block 27 (Streets 4, 5, 6, and 7).
Vista Gate Extension	One of four east-west collector roads in Block 27. Provides a direct connection to Vista Gate at Keele Street to the planned Kirby GO Station area at the Barrie GO Rail line, and north-south collector road Street 8.
Street 4	One of five north-south collector roads in Block 27. Provides north-south access to lands west of the natural area east of Jane Street. Connects Kirby Road to Street 1, 2 and 3.
Street 5	One of five north-south collector roads in Block 27, and one of two that spans Block 27 from Kirby Road to Teston Road. Provides north-south access to lands between natural areas, with a potential connection to Cranston Park Avenue at Teston Road. Cranston Park Avenue is a critical connection as it connects directly to McNaughton Road with existing YRT bus services.
Street 6	One of five north-south collector roads in Block 27, and one of two that spans Block 27 from Kirby Road to Teston Road. Provides north-south access to lands between natural area and Barrie GO rail line, with a connection to St. Joan of Arc Avenue at Teston Road.
Street 7	One of five north-south collector roads in Block 27. Provides a secondary access point to Teston Road as an alternative to Street 6 just west of the Barrie GO rail line.
Street 8	One of five north-south collector roads in Block 27. Provides a collector road serving the Kirby GO Transit Hub Local Centre between the Barrie GO Rail Line and Keele Street. Connects directly to the primary entrance to the Future North Maple Regional Park at Keele Street.

Note: Block 27 Recommended Road Network subject to Secondary Plan approval

Next Steps

- Recommended 2031 Transportation Network will be reviewed and refined based upon public input
- Review process will also involve ongoing discussions with other agencies
- Draft Report by Fall 2017

Get Involved

Please fill out the **comment form** and return it to us today or provide your comments online by **April 19, 2017**.

For more information or to complete the Online Feedback form, visit us at:

www.nvnctmp.ca

Join the study mailing list

Contact Us

Please share your thoughts or opinions about the TMP by sending us an email at:

Winnie Lai, P. Eng.
City of Vaughan Project Manager
Development Engineering & Infrastructure Planning
City of Vaughan
Phone: 905-832-8585 Ext. 8192
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Richmond Hill, ON L4B 1J8
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Email: jonathan.chai@hdrinc.com

Thank you for attending today's meeting!

Your input is important to us!

Public Information Centre 2

April 5, 2017

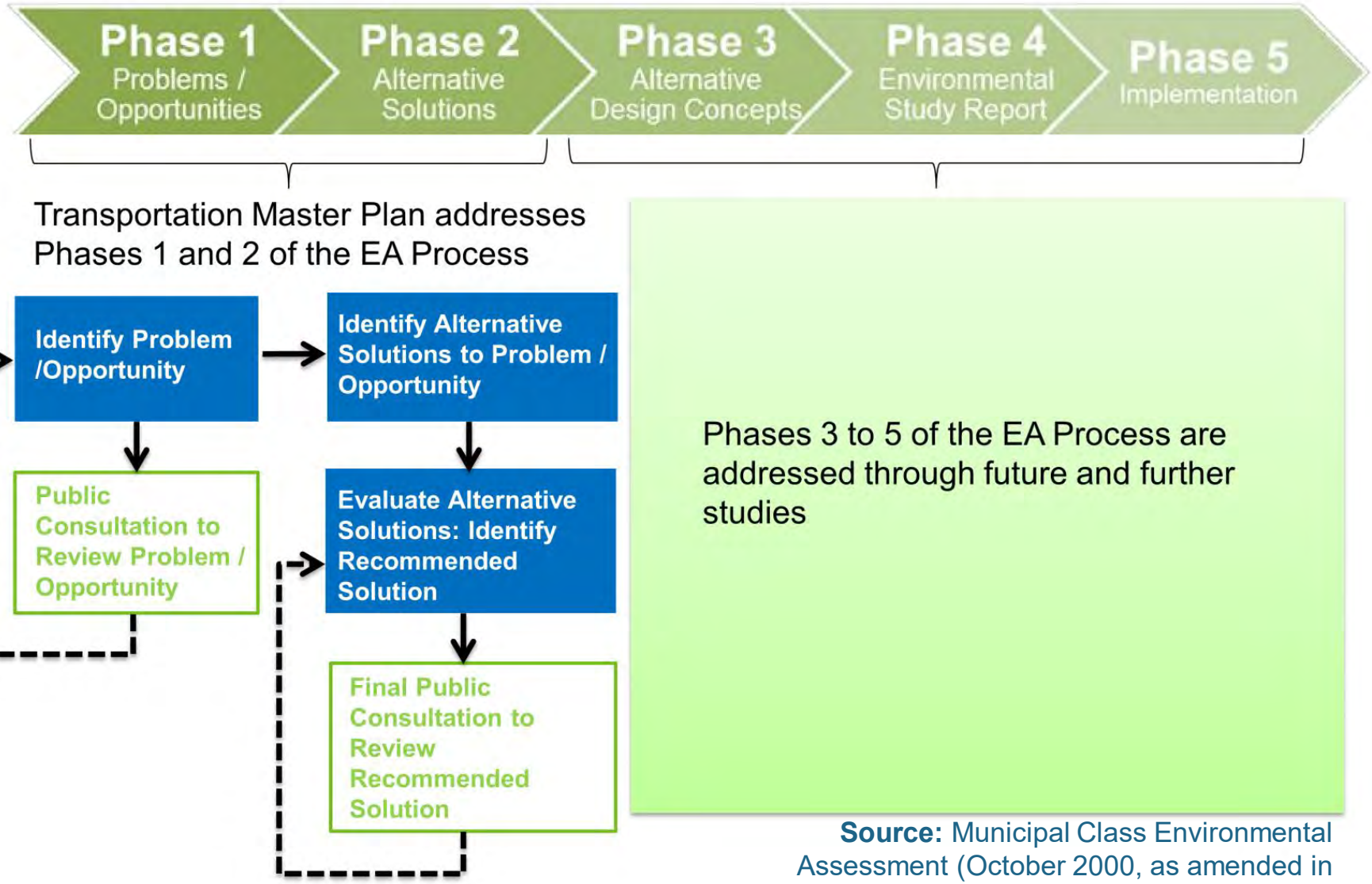
VAUGHAN

HDR

Study Schedule

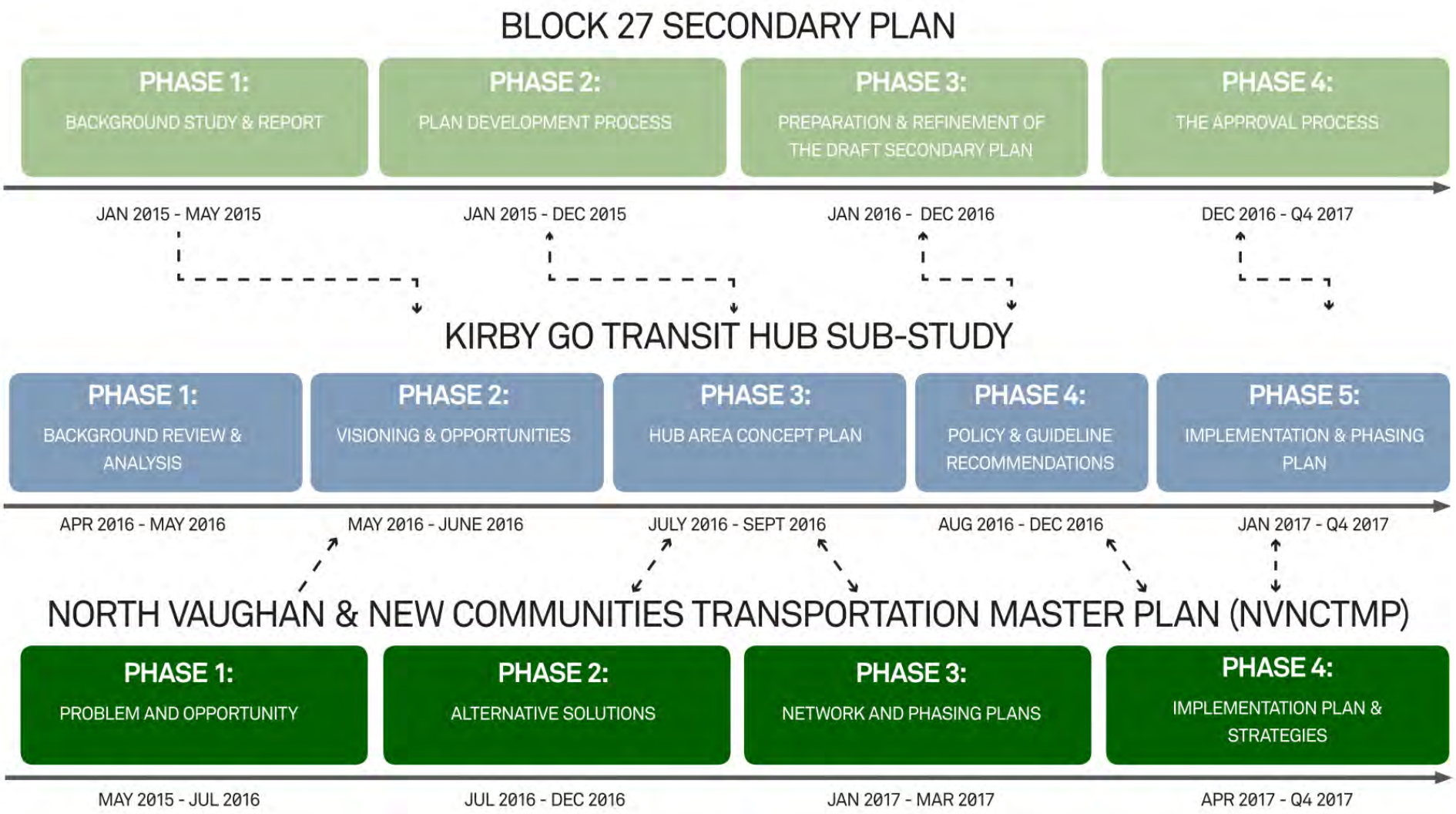
- Agency Meeting #1 – August 6, 2015
- Stakeholder Visioning Workshop – August 19, 2015
- PIC #1 – October 13, 2015
- Agency Meeting #2 – March 10, 2017
- **PIC #2 – April 5, 2017** ← **We are here**
- Draft Report Q3 2017

The Environmental Assessment Process



Source: Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011, and 2015).

Study Overview and Related Studies



Purpose

Support **all modes** of travel

Inclusive **public consultation**

Support and promote **employment opportunities**

Support development of **new community** areas

Connect **existing communities**

Support establishment of **Kirby GO Station**

What we heard

Challenges

- Existing traffic congestion
- Limited east-west connections
- Transit linkages
- Access to trails
- Cycling and walking connections across Hwy 400
- Environmental features

Ideas for Improvement

- More designated / separated bike facilities
- Improved transit service to key destinations
- Crosswalks on Regional Roads
- Improved east-west road capacity

Opportunities

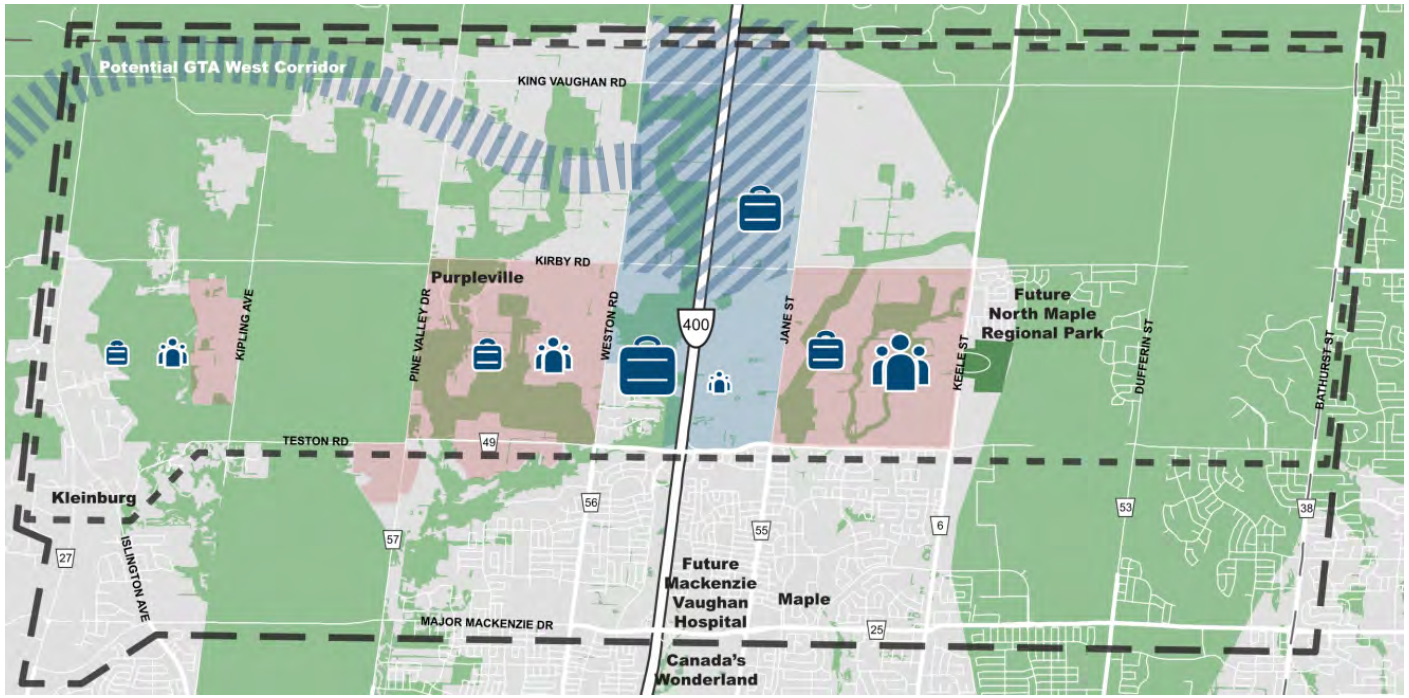
- Kirby and Teston connections
- Integrate active transportation connections with environmental features

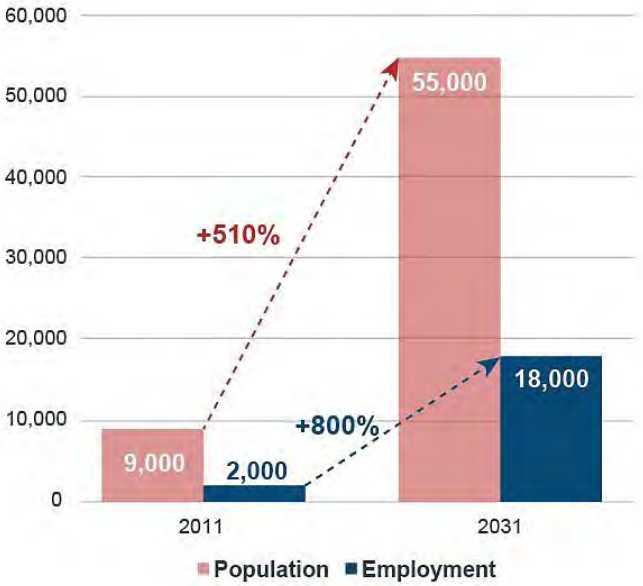
Prioritizing Infrastructure

- Balanced priority for **all travel modes**

Planned Growth

The Study Area is expected to grow by approximately **46,000 people** and **16,000 jobs** between 2011 and 2031





LEGEND

- Primary Study Area
- Secondary Study Area
- Population Growth (2011 - 2031)*: Population > 25,000; Population ≤ 5,000
- Employment Growth (2011 - 2031)*: Employment > 7,500; Employment ≤ 500
- Potential GTA West Corridor - Provincial Environmental Assessment Study currently on hold

*Draft growth projection subject to Secondary Plan approval

Sources:

- York Region Draft 45% Intensification Scenario
- Block 27 and Block 41 Draft Secondary Plan Forecasts

Problem and Opportunity

There is a need for **capacity** and **operational improvements** for all travel modes

In today's network, there are several **gaps** in the road network, **limited** active transportation facilities, and **limited** transit service.

Without any improvements to the transportation network in the Study Area, **there will be increased travel delays** for all road users.

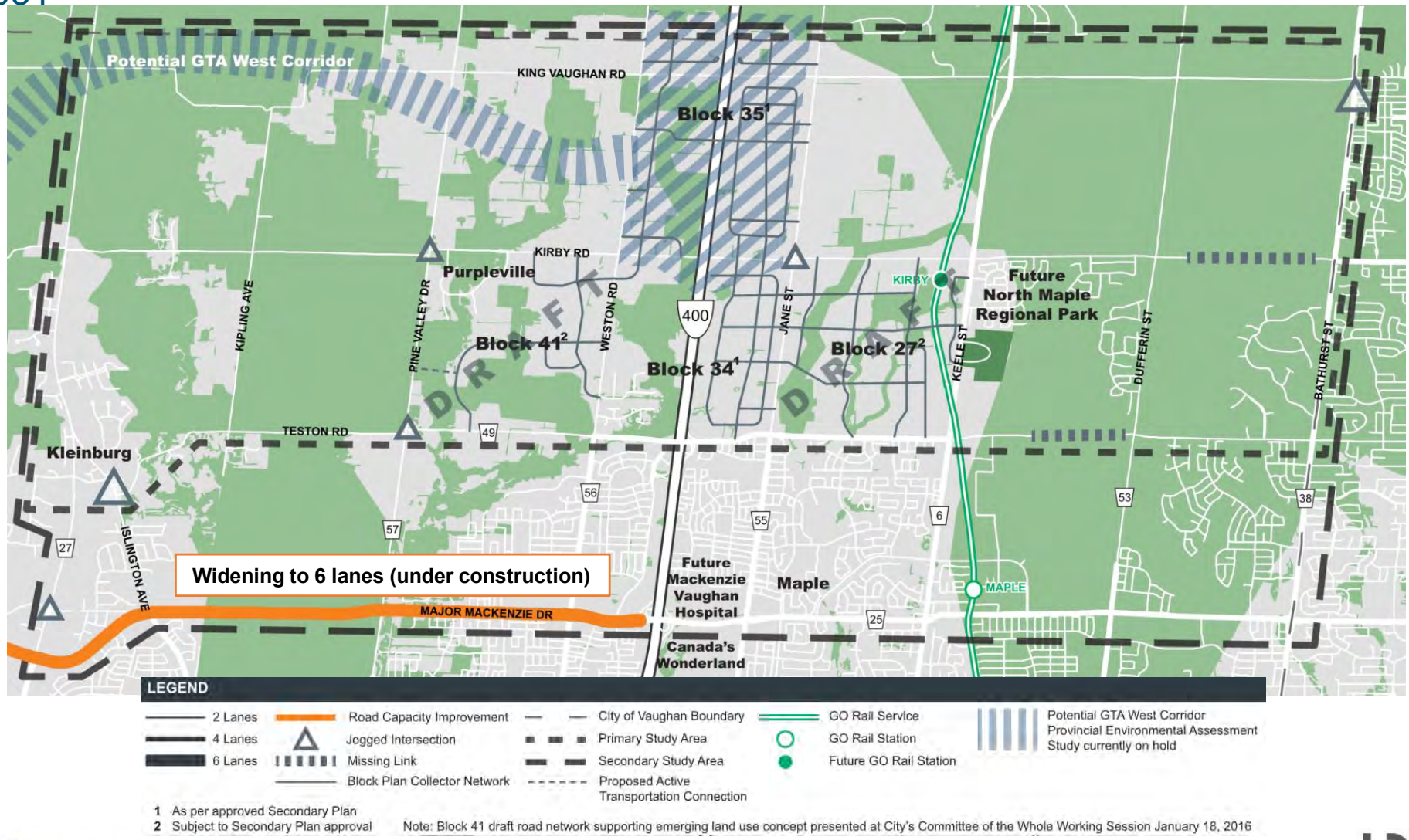
North Vaughan and New Communities areas are expected to grow by approximately **46,000 people** and **16,000 jobs** by 2031.

Opportunities exist to provide **improved connectivity** by **bridging gaps**, **eliminating jogs**, and **expanding transit service**.

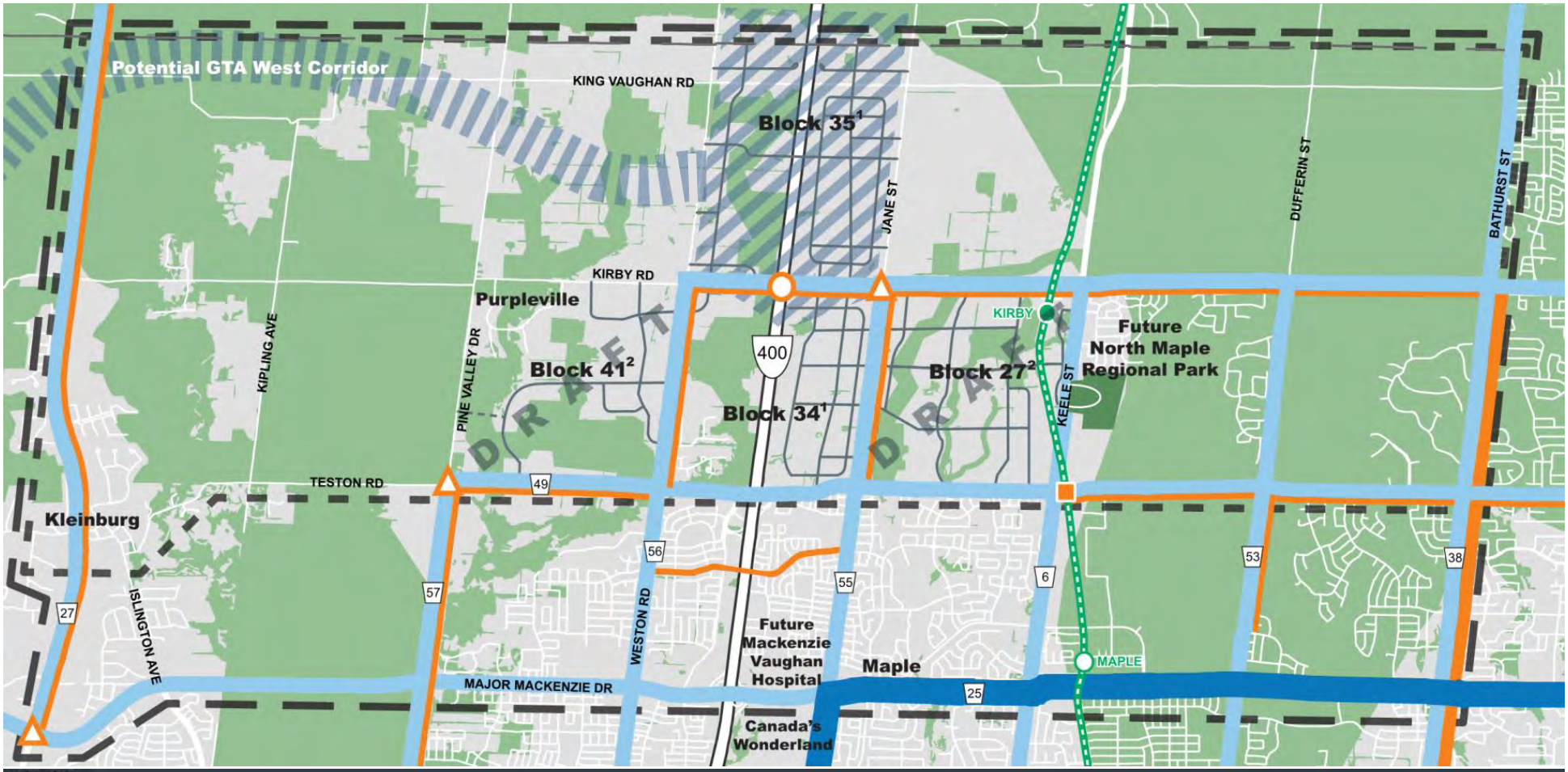
The existing pedestrian, cycling, and road networks can be **improved** and **better integrated** into the overall transportation network.

2031 Network Alternative #1 – Do Nothing

Alternative 1 = Today's Network + Under Construction Improvements + Future Growth to 2031



2031 Network Alternative #2 – York Region TMP Recommended Improvements

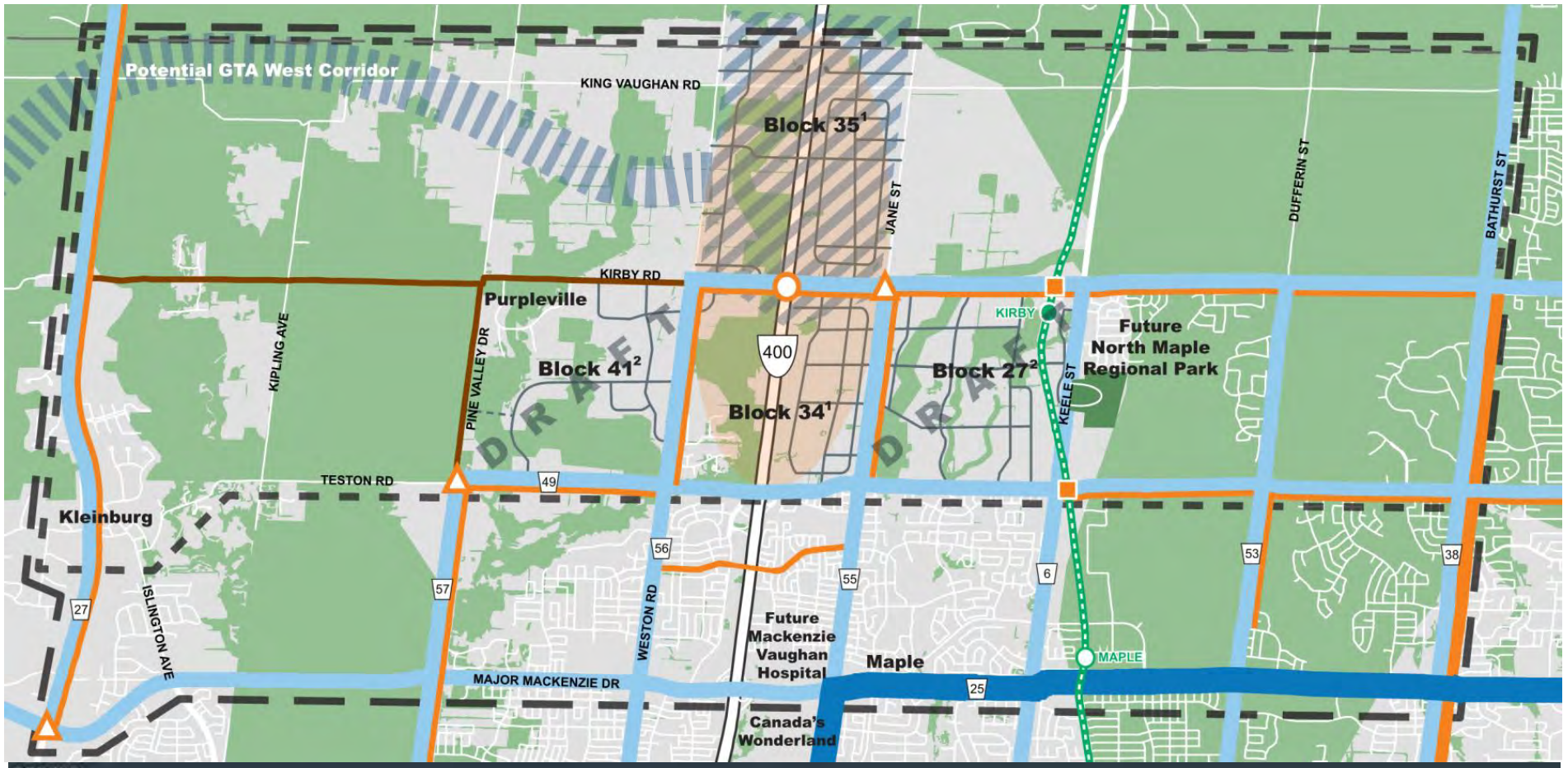


Note: Kirby Road currently under City jurisdiction

1 As per approved Secondary Plan
2 Subject to Secondary Plan approval

Note: Block 41 draft road network supporting emerging land use concept presented at City's Committee of the Whole Working Session January 18, 2016

2031 Network Alternative #3 – Alternative 2 plus Localized Improvements



* Minimum of one mid-block crossing between Teston Road and King-Vaughan Road is recommended Subject to further EA study and completion of the GTA West Corridor EA Study

Evaluation Considerations

Evaluation of the alternative solutions considered the following:

Transportation

- Pedestrian and bicycle connectivity
- Ensures efficient movement of people and goods
- Promotes accessibility for all travel modes to all land uses and for users of all ages and abilities
- Promotes reliable and convenient transit

Natural Environment

- Impacts on natural vegetation, wildlife, and aquatic habitats
- Impacts on surface water and groundwater
- Impacts on air quality from vehicle exhaust emissions
- Mitigate climate change impacts

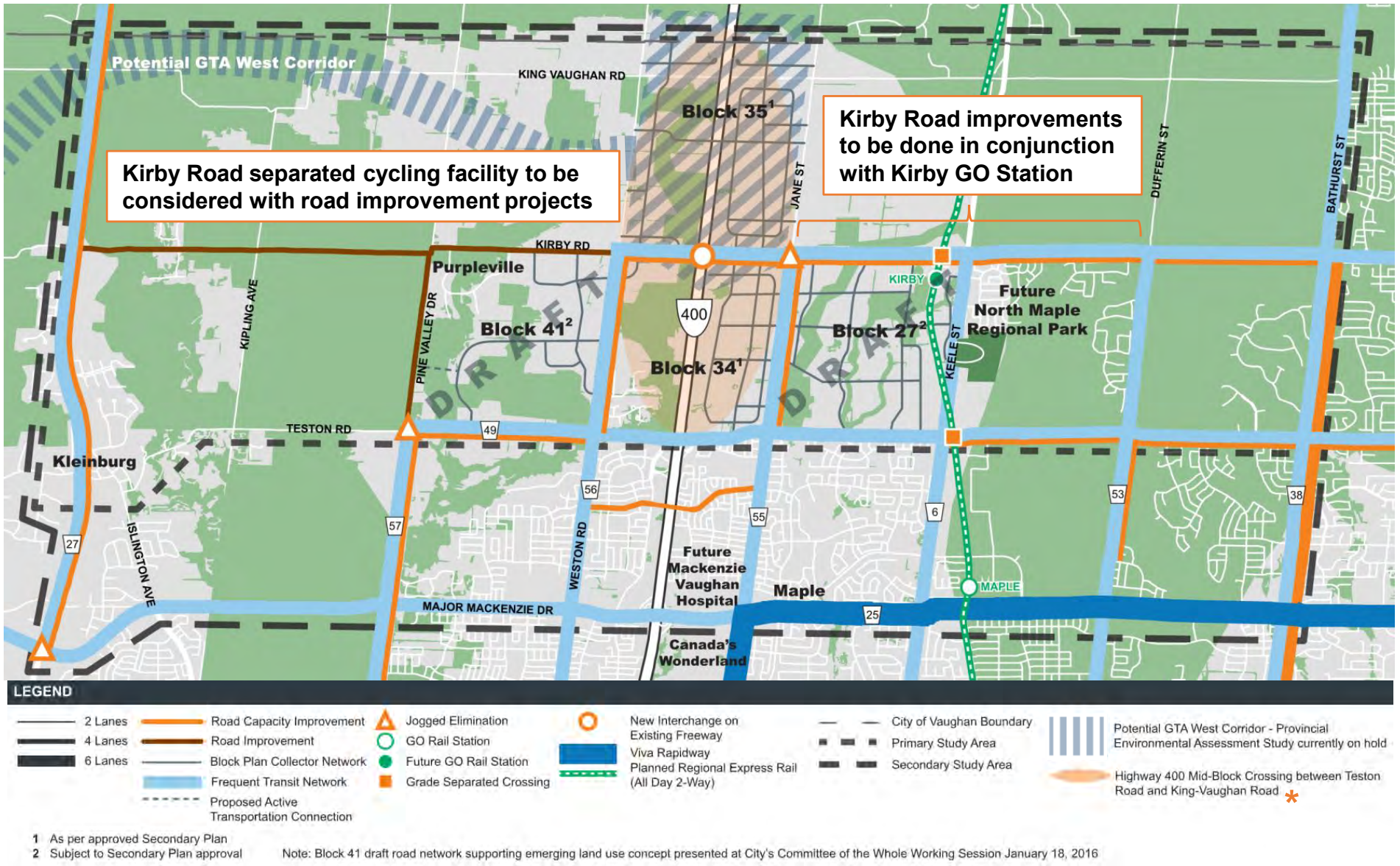
Socio-Economic Environment

- Support growth of the new community areas by maximizing accessibility and minimizing congestion
- Minimizes impacts on existing neighbourhoods

Cost and Implementation

- Minimizes maintenance and operational costs
- Minimizes construction costs
- Feasible to construct
- Solution is in-line with provincial, regional, municipal planning documents
- Acceptable to other stakeholders, agencies

Recommended Network



* Minimum of one mid-block crossing between Teston Road and King-Vaughan Road is recommended
Subject to further EA study and completion of the GTA West Corridor EA Study

Questions?

Appendix C7
Public Comments

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

RICHARD LOVAT & MIZENGCRES

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0. **Please enter your Work Postal Code:** ________

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. Nashville Rd & Huntington rail track., Harleis, prefer gates.
2. Parks needed., community Centre.
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☒ NO If yes, please provide your email address:________________

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J1C0 **Please enter your Work Postal Code:** L5L1C7

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. Traffic + Congestion
2. Safety for Pedestrians
3. Cycling Trails - Safety

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. Keep it Green.
2. Trails, Pedestrian + Bike Friendly.
3. Better flow of traffic.
4. Better lit trails / walkways.
5. Improved transit / GO service to Toronto / Mississauga - more frequent.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: wozzybaby@gmail.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L7E 2Y9 **Please enter your Work Postal Code:** L4K 5V7

1) What <u>are your top concerns</u> within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. TRAFFIC CONGESTION
2. SOUND POLLUTION
3. LACK OF PUBLIC TRANSIT

2) List some key words that describe <u>your vision</u> for the study area/ <u>suggestions for improvement</u>:

1. PARKWAYS / WIDER HIGHWAYS
2. GO STATIONS / PUBLIC TRANSIT
3. REDUCING TRAFFIC CONGESTION
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: VINCE.DEGASPERIS@GMAIL.COM

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1E0 **Please enter your Work Postal Code:** downtown.

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. cutting thru town. 5 or 27 to Hwy 400.
2. Public trans A needed.
3. options that are viable; transit right now is too slow.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. School busing 4km. range, no option.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address: doucettmail@gmail.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1L0 **Please enter your Work Postal Code:** L6P 1R6

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. Traffic
2. accessibility w/ public transit
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. retain village of Kleinburg community
2. retain nature areas
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

❑ YES ❑ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. sidewalk, cycling path -, dangerous for cycling
2. speed bumps. to slow down (stegman mills)
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: kerrianderily@rocketmail.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code Kleinburg. **Please enter your Work Postal Code:** _____

1) What <u>are your top concerns</u> within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Public transit increase is needed.
2. 427 extended to alleviate traffic.
3. better shoulders for cycling. (Paved, generous)

2) List some key words that describe <u>your vision</u> for the study area/ <u>suggestions for improvement</u>:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

❑ YES ❑ NO If yes, please provide your email address: Hugomarvin@rogers.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*.

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 1N2 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. observing new development in the area
2.
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☒ YES ☐ NO If yes, please provide your email address: eva.pulnicki@york.ca evapulnicki@rogers.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** M9V 3Y8

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. traffic on northbound Hwy 27 - late afternoon
2. " northbound on Islington Ave - late afternoon
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. better accomodation/room for drivers.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☒ YES ☐ NO If yes, please provide your email address: maria@mariamorgis.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

Hwy 27 & steeles. business owner lives in Kleinburg.

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L6A2R9 **Please enter your Work Postal Code:** _____

1) What <u>are your top concerns</u> within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Traffic is becoming a large problem
2.
3.

2) List some key words that describe <u>your vision</u> for the study area/ <u>suggestions for improvement</u>:

1. Improve the Hwy 400
2. more multi-use paths
3. Include more nature trails in plan
4. more parks
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

❑ YES ❑ NO If yes, please provide your email address:_____

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VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 1V7 **Please enter your Work Postal Code:** M9L 1Y3

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Widen Islington as traffic is bad during morning and after work commute.
2. Need buses that run on Sundays.
3. Better Flow on Weston & Hwy 7 with new condos getting built.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

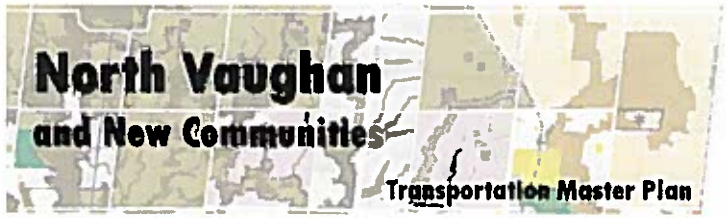
1. Better Public transit.
2. Same ticket for transit when you pass Steeles.
3. Hwy 427 extension.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☒ YES ☐ NO If yes, please provide your email address: laurameli@rogers.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN



HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4L 7T4 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Traffic Hwy 7 + Weston what is the plan with all the new condos?
2.
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

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VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. LACK OF ROAD SPACE (i.e) 4 LANES FOR: MAJOR MACK/ 27/ TESTON/ PINE VALLEY DRIVE
2. BEFORE ISSUING PERMITS FOR ANOTHER 30K POPULATION
3. → ANY HOPE OF THE GTA HWY BUILT IN THE NEXT 20 YEARS
   HW 400

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** L4K 3Y1

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. traffic and stop lights on major mak
2. traffic thru Kleinburg
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

❑ YES ❑ NO If yes, please provide your email address:_____

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VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 4E4 **Please enter your Work Postal Code:** L5N 6S8

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Respect Seniors – we have opinions!
2. Extend 427 to MAJOR MAC
3. Extend Major MAC
4. Build Hospital
5. Need Convenience Store

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

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VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4L 4E4 **Please enter your Work Postal Code:** L4L 5L5

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. shops (groceries, drug stores etc.)
2. transportation Major Mackenzie Rd. too many cars for size of road
3. public transportation (subway extension)

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. commercial area in Kleinburg
2. playground within the residential areas
3. traffic issues
4. hospital
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: allanp73@gmail.com

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VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. preserving greenspace
2. easy transportation
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. calm, peaceful community
2. easy access to Kleinburg town
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: navina.atwal@gmail.com

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VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L6J 1C8 **Please enter your Work Postal Code:** L5R 4R4

1) What are your top concerns within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. Expand Hwy 27 to 6-8 lanes → too much population for current roads
2. Extend 427 to King → " " " "
3. " Kirby to 4 lanes → " " " "

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. Proper infrastructure (Not in current plans)
2. Less dense housing.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: p_confortin@yahoo.ca

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 2V2 **Please enter your Work Postal Code:** _____

1) What <u>are your top concerns</u> within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Too much Congestion - too much traffic
2.
3.

2) List some key words that describe <u>your vision</u> for the study area/ <u>suggestions for improvement</u>:

1. No more houses to be built.
2. More parks
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☑ NO If yes, please provide your email address:_____

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VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code _____ **Please enter your Work Postal Code:** _____

1) What <u>are your top concerns</u> within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. traffic - wider roads
2. extend pine Valley - for the greater good not a small area
3. set up trains

2) List some key words that describe <u>your vision</u> for the study area/ <u>suggestions for improvement</u>:

1. greater good
2. community
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L4H 2P5 **Please enter your Work Postal Code:** M5H 2P5

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. traffic front of high school
2. speed in quiet street
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. add bumps on quiet street.
2. drop off / pick off area in all high schools
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☐ NO If yes, please provide your email address:_____

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VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code _____ **Please enter your Work Postal Code:** L0J1C0

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Congestion on Islington Ave during rush hour
2. Parking on islington.
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1.
2.
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☐ YES ☒ NO If yes, please provide your email address:_____

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VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code _____ **Please enter your Work Postal Code:** M.. ... (Toronto)

1) What ~~are your top concerns~~ interests within or surrounding the study area?
(Use the map on the other side of this page to circle area of concern)

1. How to make the plans for Block 41 integrate to TMP vision & ultimate findings
2. in a way that is implementable; planned for ease of movement for community members as a priority;
3. How to provide ~~the~~ most transportation/active transportation-mindful plans for accessible trails/cycling and walking paths that might focus more on accessibility than on NHS.

2) List some key words that describe ~~your vision for~~ thoughts about the study area/ suggestions for improvement:

1. Innovative/New ways of thinking about transportation
2. [redacted] integration of uses—active transportation w/ active recreation
3. Impacts on parking → reduced parking requirements where reasonable
4. Integration of processes—(ie./ Teston Rd EA in planning in Block 41 → how to do this to save time + share resources/data.)
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

☑ YES ☐ NO If yes, please provide your email address: mara@fieldgatedevelopments.com

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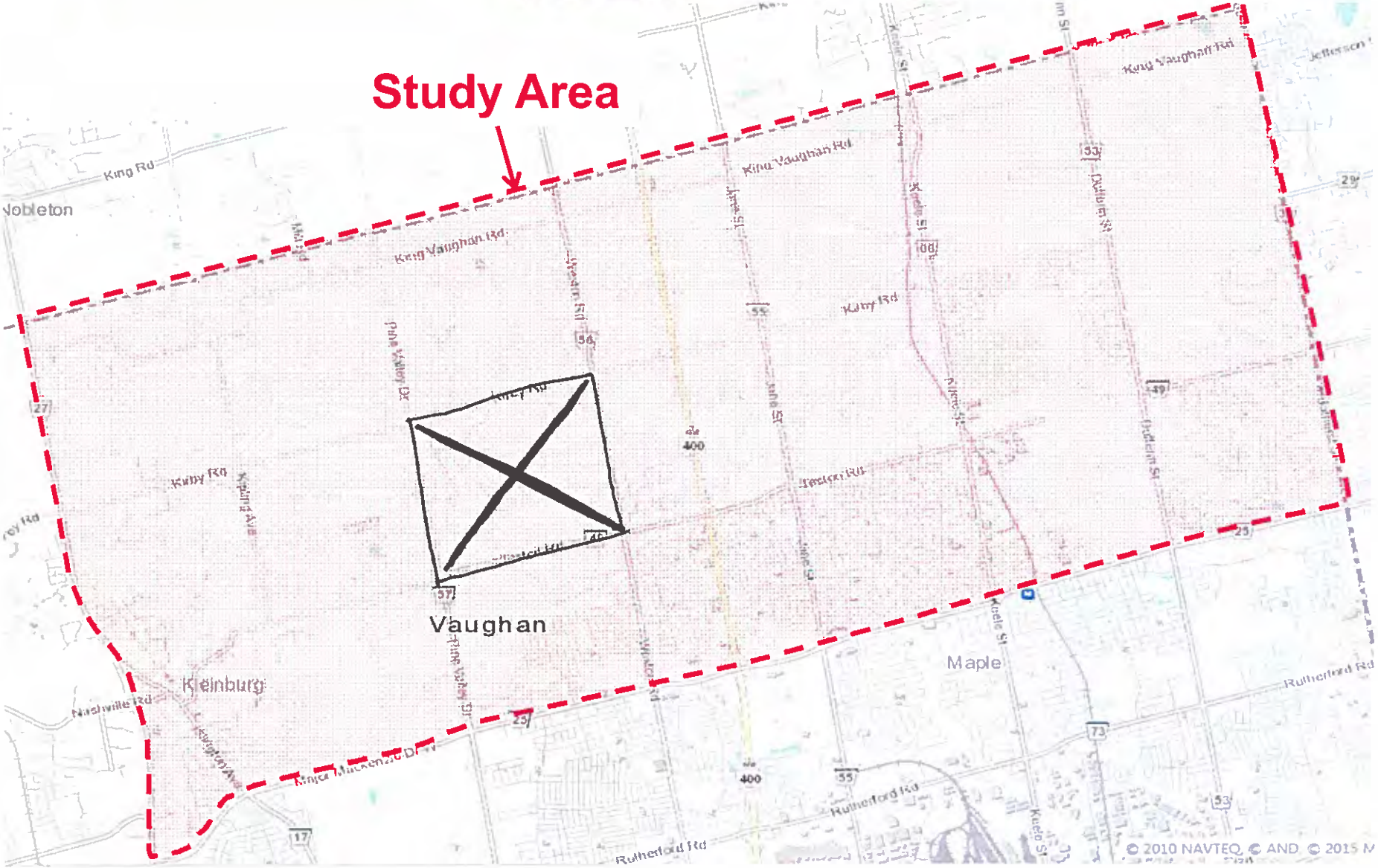
VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR



VAUGHAN

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L6A 1A4 **Please enter your Work Postal Code:** _____

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. Traffic
2. cross over 400 (Pedestrian/cycle)
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. cycling / Bike rakes
2. Public Transportation
3. complete sidewalks
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

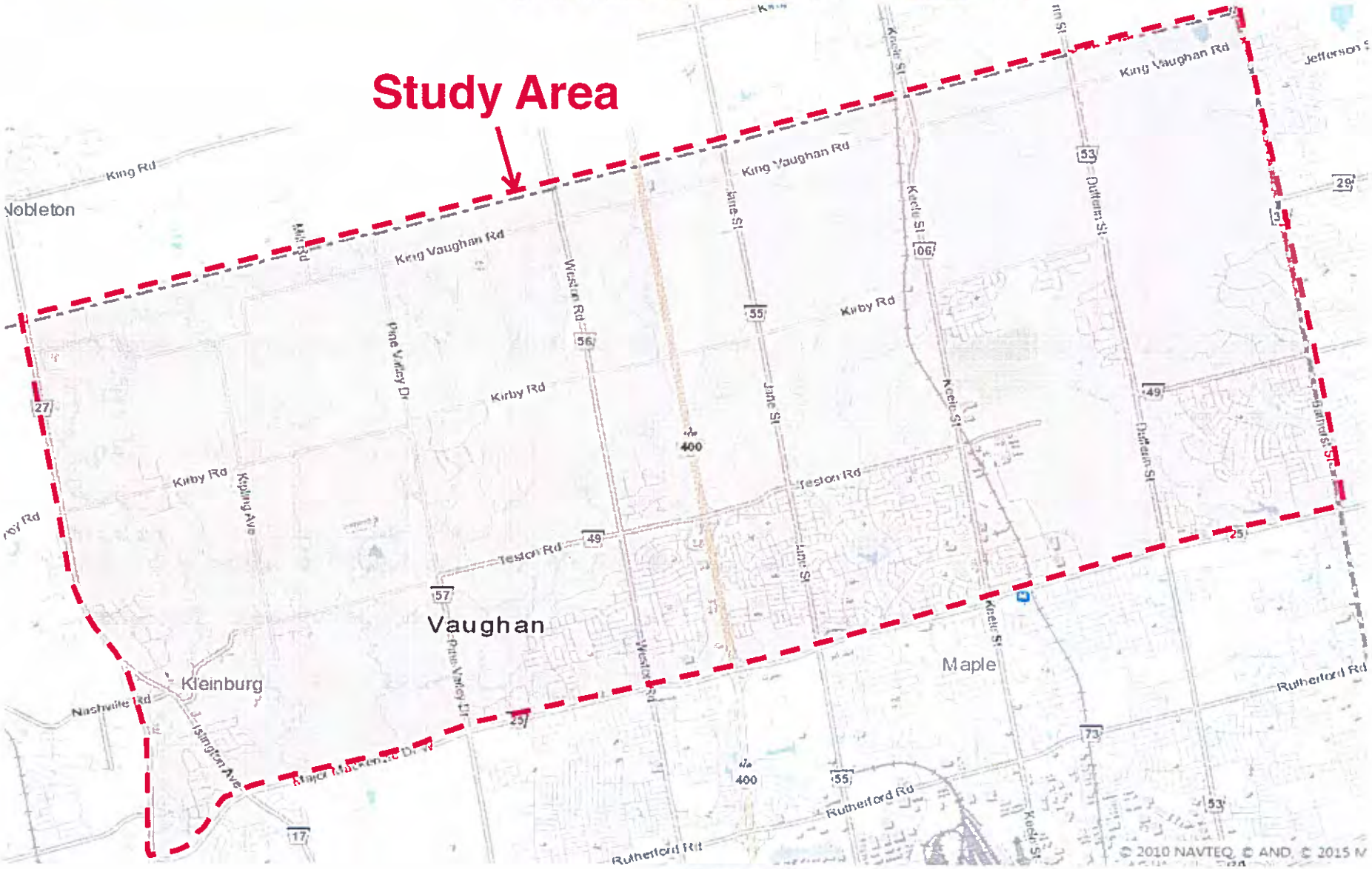
☑ YES ☐ NO If yes, please provide your email address: desouzapete@hotmail.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR



VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L0J 1C0 **Please enter your Work Postal Code:** L0J 1C0

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. My major concern is to prevent Kleinburg & Nashville from being inundated
2. with traffic trying to go East-West (Peel to #400).
3.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. Better access for seniors to medical facilities (very long to
2. get from Kleinburg/Nashville to existing or planned hospitals).
3.
4.
5.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

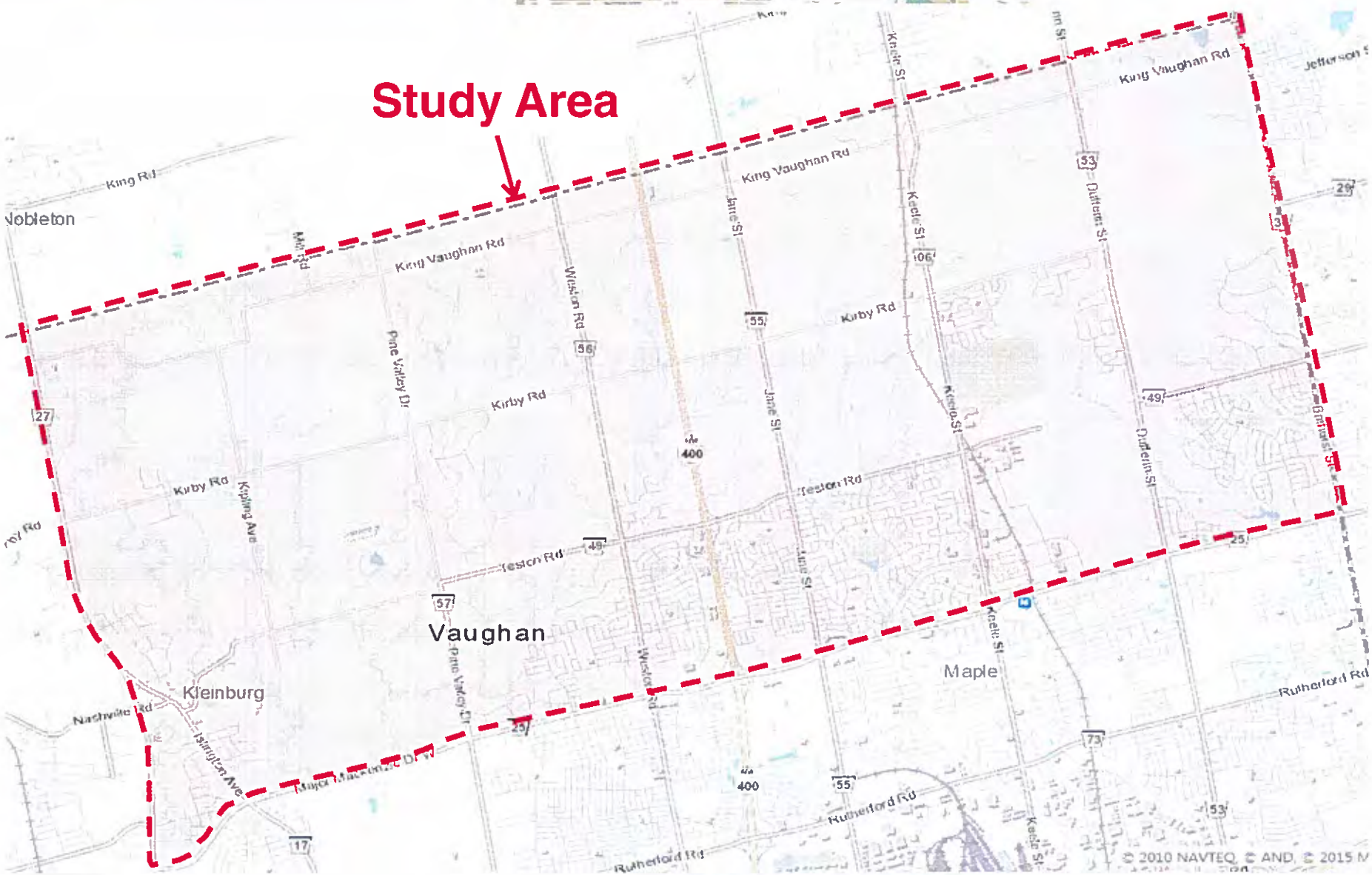
☑ YES ☐ NO If yes, please provide your email address: ~~DVD~~ DVDBRNIX@HOTMAIL.COM

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR



VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR

We want to hear from you!

Let us know what you think about North Vaughan & the New Communities:

Please enter your Home Postal Code L6S 1C0 **Please enter your Work Postal Code:** L4H

1) What are your top concerns within or surrounding the study area?

(Use the map on the other side of this page to circle area of concern)

1. reduction of traffic infiltration through Kleinburg, eg. dedicated turn lanes to incentivise motorists to use Pine Valley instead of Teston into Kleinburg
2. better transit linkages from Kleinburg to Jane/7 Hwy and Toronto
3. provide additional turn lanes from Nashville south to 27 to allow for better traffic flow - currently southand west are one lane and gets very congested.

2) List some key words that describe your vision for the study area/ suggestions for improvement:

1. ease of travel, less congestion
2. linkages to Toronto through better transit
3. safety for cyclists and pedestrians
4. preservation of greenbelt and rural areas
5. more opportunities for recreation, extention of transportation network to allow for cyclists and pedestrians.

3) Would you like us to contact you for future Community Workshops / Public Information Centers?

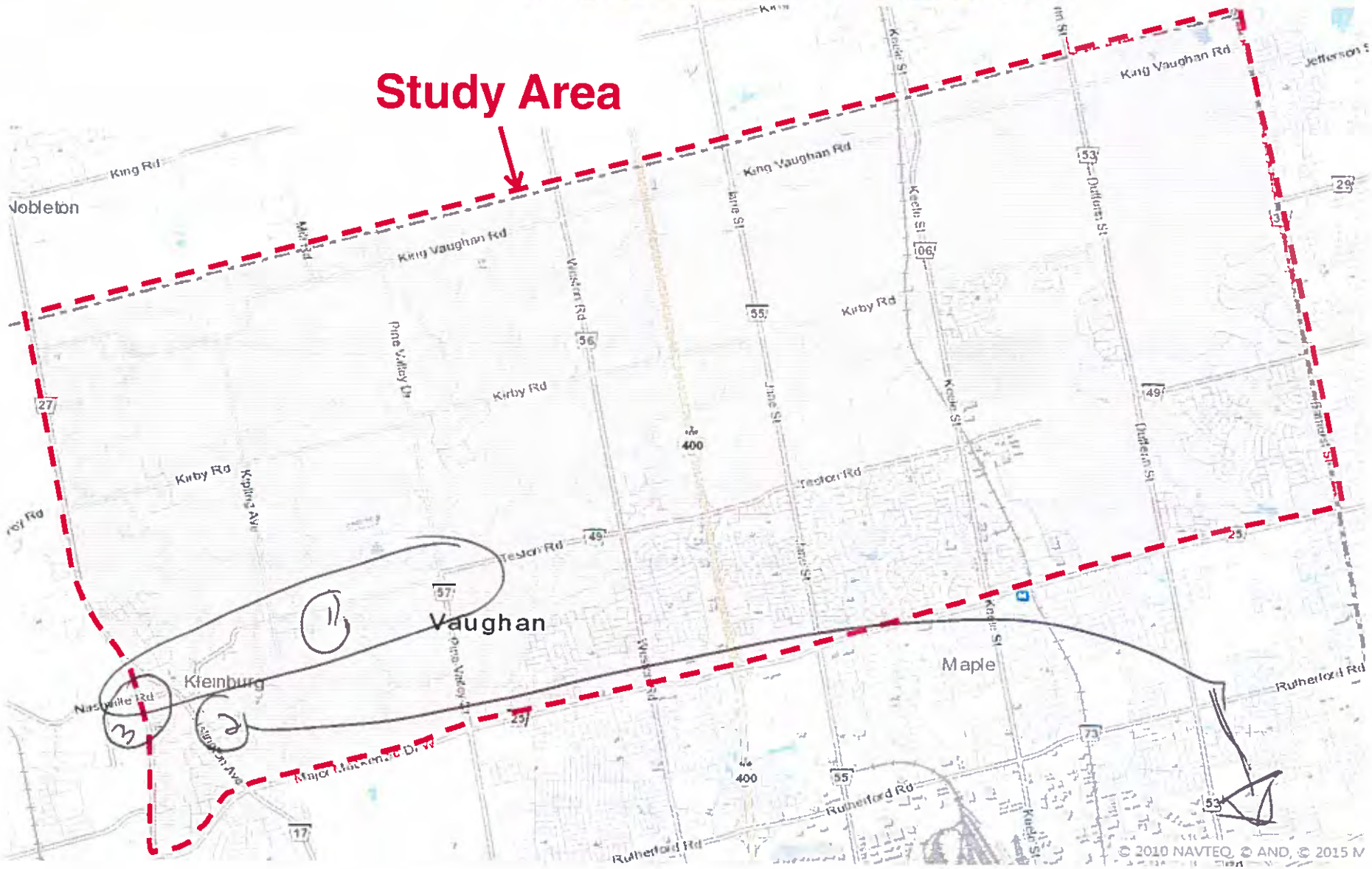
☑ YES ☐ NO If yes, please provide your email address: micellaiacovelli@rogers.com

To fulfill Environmental Assessment Act requirements, we will maintain your comments on file for use during this Study and may include them in Study documentation. With the exception of personal information, all comments received will become part of the public record. Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act.*

VAUGHAN

North Vaughan and New Communities Transportation Master Plan

HDR



Public Information Centre 2 Comment Form

Use this form to record any comments, ideas, or concerns about the information presented today. Feel free to use the back if you require more space. Thank you for your input!

If you would like to be added to the study mailing list please fill out the form below:

Name (please print): Ernest Ng

Email Address: ngsw.ernest@gmail.com

Mailing Address: 82 Giancola Crescent

City: Vaughan Postal Code: L6A 2T5

Please leave your Comment Form in the drop box or send your comments (by April 19, 2017) to:

Winnie Lai
City of Vaughan Project Manager
Development Engineering &
Infrastructure Planning Service
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, Ontario L6A 1T1
Telephone: 905-832-8585 ext. 8192
Email: winnie.lai@vaughan.ca

Jonathan Chai
Consultant Project Manager
HDR Corporation
100 York Boulevard, Suite 300
Richmond Hill, Ontario L4B 1J8
Telephone: 289-695-4629
Email: jonathan.chai@hdrinc.com

Visit our web page to learn more:

www.nvnctmp.ca

Other Comments:

With the Block Plan (Block 27), there needs to be a higher priority on the connection of Teston (btwn Keele + Dufferin)

Information will be collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

North Vaughan and New Communities Transportation Master Plan

VAUGHAN

Will there be potential pedestrian connections over the rail line?

Southeast corner of Block 27 lacks connectivity in relation to the rest of the Study Area
- are there any mitigations to the grade separation that currently exists on Keele (over the rail line?)

York Region's Road Program does not plan for the Teston extension until 2024. Is there a way to time the extension with the development of Block 27?

Information will be collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

North Vaughan and New Communities Transportation Master Plan

VAUGHAN

Public Information Centre 2 Comment Form

Use this form to record any comments, ideas, or concerns about the information presented today. Feel free to use the back if you require more space. Thank you for your input!

If you would like to be added to the study mailing list please fill out the form below:

Name (please print): Sebastian Hon

Email Address: seby_hon@yahoo.com

Mailing Address: 106 Leameadow Road

City: Thornhill Postal Code: L4J 9G9

Please leave your Comment Form in the drop box or send your comments (by April 19, 2017) to:

Winnie Lai
City of Vaughan Project Manager
Development Engineering &
Infrastructure Planning Service
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, Ontario L6A 1T1
Telephone: 905-832-8585 ext. 8192
Email: winnie.lai@vaughan.ca

Jonathan Chai
Consultant Project Manager
HDR Corporation
100 York Boulevard, Suite 300
Richmond Hill, Ontario L4B 1J8
Telephone: 289-695-4629
Email: jonathan.chai@hdrinc.com

Visit our web page to learn more:

www.nvnctmp.ca

Other Comments:

I would urge the city & regional council to work with Metrolinx to build a multi-story parking garage at future Kirby Go station to

Information will be collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

North Vaughan and New Communities Transportation Master Plan

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Go

~~Action~~ accommodate future ^ capacity expansion to all-day 15 minutes frequency. I ~~it~~ commute to Rutherford Go station. Right now the parking garage is full after 7:30 am, despite morning ~~trains~~ trains running to 8:30 am. This discourages residents to take public transit & instead drive to downtown.

Information will be collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

Appendix D: Transportation Analysis and Modelling

City of Vaughan

February 24, 2018

hdrinc.com
100 York Boulevard, Suite 300, Richmond Hill, ON, CA L4B 1J8
(289) 695-4600

Contents

Tables

Exhibits

1 Transportation Analysis and Modelling

The following report documents and provides details on the transportation analysis conducted for the North Vaughan and New Communities Transportation Master Plan (NVNCTMP) including:

- Model Platform
- Model Development
- Performance Measures
- Model Calibration
- 2031 Baseline Forecast
- Intersection Analysis

2 Model Platform

For the purposes of identifying future travel demand forecasting tool to provide input to the North Vaughan TMP study, the study team has identified two feasible options:

1. Vaughan Sub-Area Model (VSAM)
2. York Region Rapid Transit Plan Model (YRTP)

Both of the above models are based on the EMME software. **Table 2-1** compares and contrasts the benefits or limitations of using one versus the other.

Table 2-1: Model Platform Comparison

Variable	VSAM	YRTP	Preference
BASE MODEL ASSUMPTIONS			
Base Traffic Zone System	2001GTA – 103 Zones within the City of Vaughan	2006GTA – 145 Zones within the City of Vaughan	YRTP
GTA-wide population and employment inputs	Based on latest information from 2009, in the 2001GTA traffic zone system	Based on latest information from 2012 in the 2006GTA traffic zone system	YRTP
Base Trip Generation rates (per population and employment)	2001 TTS	2006 TTS	YRTP
Base Trip Distribution	2001 TTS	2006 TTS	YRTP
GTA-wide road network assumptions	Based on latest information using 2006 as the base year	Based on latest information using 2011 as the base year	YRTP
GTA-wide transit network assumptions	Based on latest information using 2006 as the base year	Based on latest information using 2011 as the base year	YRTP
Base year model validation	2006	2011	YRTP
MODEL REFINEMENTS			
Disaggregated Zones	• 185 within City of Vaughan • 40 within NVTMP Study Area • 1 zone for Block 27 • 1 zone for Block 41	• 160 within City of Vaughan • 32 within NVTMP Study Area • 1 zone for Block 27 • 1 zone for Block 41	None-while VSAM provides more zones, additional model disaggregation is still required in both cases particularly for Block 27 and 41
Road Network Detail	Vaughan Local Collector	Vaughan Local Collector	VSAM

Variable	VSAM	YRTP	Preference
	Roads included in ALL existing neighbourhoods adjacent to study Area	Roads included in some existing neighbourhoods (not west of Weston)	
Time Periods Modeled	AM and PM Peak Hour	AM Peak Hour	VSAM – however PM may not be required as there are no major retail trip generators in the NVTMP Study Area
MISC			
Consistent with other current studies (i.e. York Region TMP North Markham TMP)	No	Yes	YRTP
Consistent with other City of Vaughan Studies (i.e. Vaughan TMP)?	Yes	No	VSAM

The primary advantage to VSAM is the additional traffic zone details within Vaughan as well as the PM model. However these advantages are negated because additional traffic zone detailing will be required within Blocks 27 and 41 in both models, and the need for the PM model may not be as important for the North Vaughan Study Area. The additional collector roads in VSAM would need to be added to the Region's model, however this is a relatively minor task.

As such, and based on the above comparison table, **our recommendation would be to use York Region's updated EMME model as the starting point for the North Vaughan TMP study**. The primary reason for doing so is because it incorporates more up-to-date travel assumptions which should provide more reliable forecasts and secondly to ensure consistency with other on-going studies including the York Region TMP Update.

3 Model Development

To use the YRTP model as the forecasting tool for the NVNCTMP, a model calibration and validation exercise is undertaken to understand how well the model replicates observed traffic within the Study Area as the Regional model is calibrated to Regional screenlines and not necessarily to a smaller area such as the NVNCTMP study area.

It is not the intention of this study to recalibrate the EMME model to the NVNCTMP area. Methods to adjust for any identified model error are employed instead to account for the identified error or biases in the model.

3.1 Traffic Zones

To assess population and employment forecast scenarios, we propose to increase the traffic zone detail within the Study Area – particularly within new community areas of Blocks 27 and 41, the new employment areas in Blocks 34 and 35, the Block 55 East Secondary Plan area in east Kleinburg, and finally the proposed development site in the vicinity of Kirby Road east of Dufferin Avenue (missing link). These areas relative to the current zone system in the YRTP model are illustrated in **Exhibit 3-1**. The proposed changes will allow the model firstly to assign

traffic to proposed collector roads within the New Community areas and secondly to better allocate future population and employment forecasts within each block.

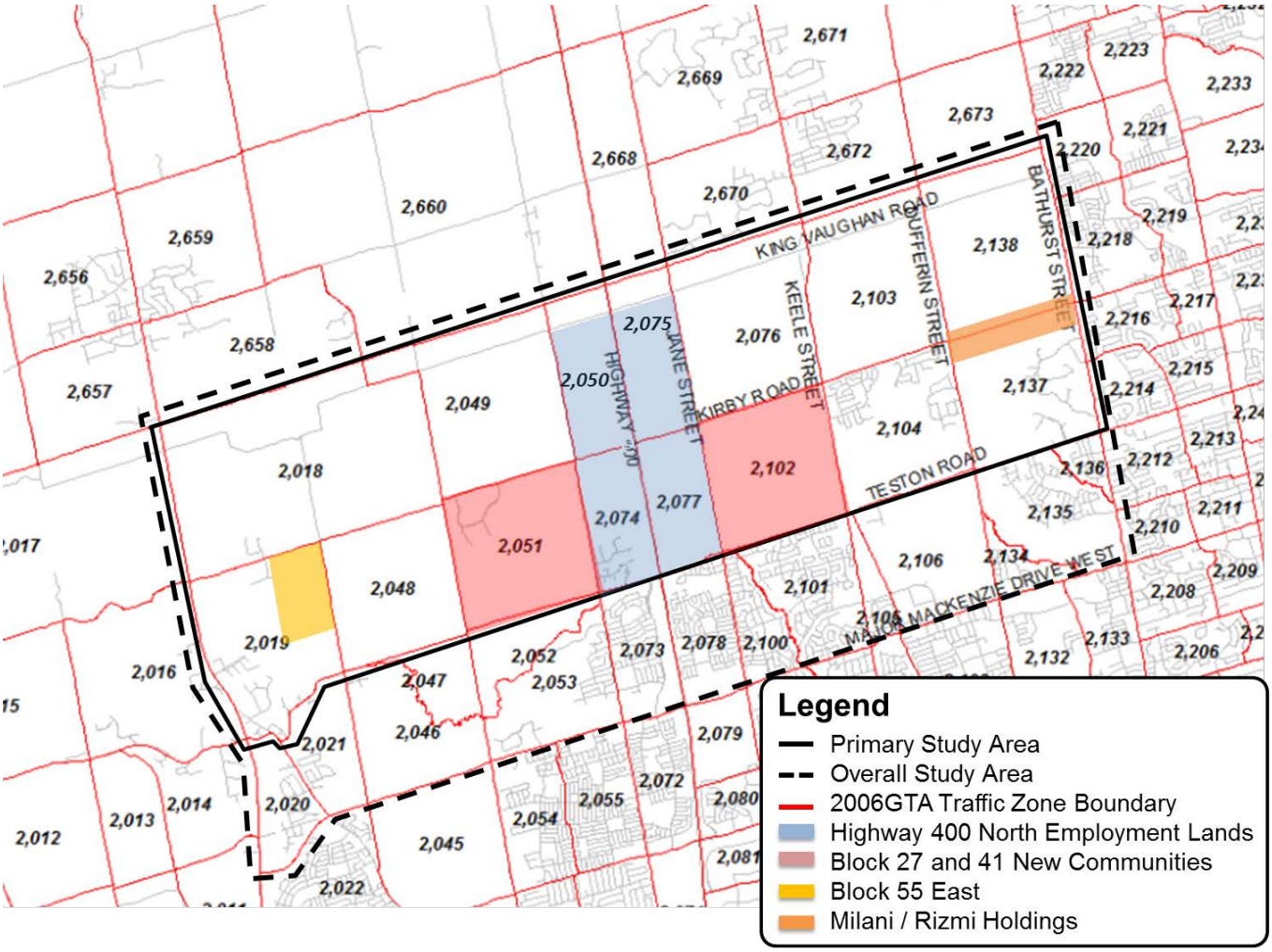


Exhibit 3-1: YRTP Model Traffic Zone System (2006GTA Zones)

The new traffic zones were coded in the EMME model and a plot from the model as coded is provided in **Exhibit 3-2**. Essentially, the growth areas of Block 27, 41, 34, and 35 will be split into quadrants, while the traffic zone representing the NE quadrant of Kleinburg will be split such that Block 55 is represented by its own zone with access directly to Kirby Road and Kipling Avenue. In addition, a new traffic zone is proposed to represent the proposed development site east of Dufferin Street at Kirby Road, connecting directly to Dufferin south of Kirby.

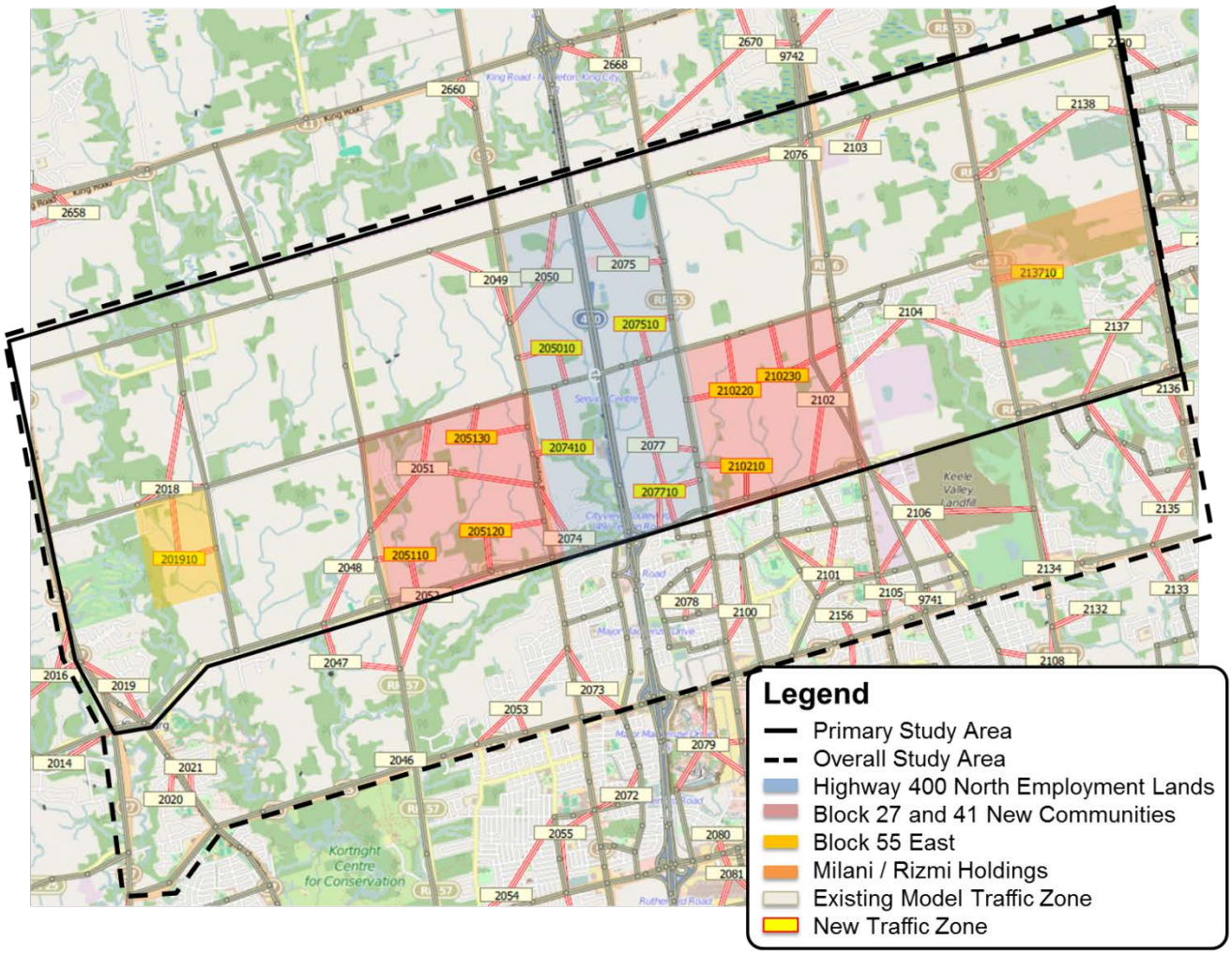


Exhibit 3-2: Proposed New Traffic Zones

3.2 Road Network Assumptions

Number lanes, free flow speed, and capacity assumptions in the 2011 EMME model are coded to reflect current roadway conditions. The number of lanes in the 2011 (base year calibration) model are illustrated in **Exhibit 3-3**, free flow speed in **Exhibit 3-4**, and capacity per lane in **Exhibit 3-5**.

Exhibit 3-3: 2011 EMME Model Number of Lanes

Exhibit 3-4: 2011 EMME Model Free Flow Speeds

Exhibit 3-5: 2011 EMME Model Capacity Per Lane Per Hour

The per lane per hour capacities are based on those used by the Data Management Group at the University of Toronto for the GTA Model Network Coding Standard and which were also applied in the York Region EMME model. Further professional judgment and knowledge of the study area specific to North Vaughan assisted in determining an accurate value for per-lane capacity to be used in link and screenline calculations.

Capacity assumptions in the NVNCTMP EMME model by road classification are summarized in **Table 3-1**.

Table 3-1: North Vaughan and New Communities TMP EMME Model Capacity Assumptions

Road Class	Hourly Capacity (vehicles per hour per lane)
Local Road	400
Collector Road	500
Minor Arterial Road	700
Regional Arterial Road	800-1,000
Provincial Highway	1,200
Provincial Freeway	1,800

Number of lane, free flow speed, and capacity assumptions are unchanged from the York Region model which is calibrated to the Regional screenline level. For the purposes of model

validation to the study area, these assumptions remain unchanged with model validation adjustments being applied post-model.

4 Performance Measures

Screenline volume to capacity ratio (v/c ratio) analysis is used to identify potential future capacity deficiencies, transportation network needs, and assess alternative scenarios.

Screenline analysis involves assessing the total amount of traffic crossing a physical or imagined boundary and comparing that total traffic against roadway capacity. The purpose of this analysis is to determine if any network-wide deficiencies exist in a grid-based road system. For this type of road network, congestion on a specific road may not necessarily warrant road improvements where a feasible alternative route exists. However, when the total traffic crossing a screenline indicates capacity deficiencies, there is a clear need for improvements. Localized congestion issues still need to be considered where the road network is not able to accommodate traffic diversion.

The ratio of travel demand versus travel supply (commonly referred to as volume to capacity ratio) is measured across these screenlines – the higher the volume to capacity ratio, the more congestion there is. This volume to capacity ratio on road and freeway links can also be described in terms of level of service. These definitions are summarized in **Table 4-1.**

Table 4-1: Link Volume to Capacity (V/C) Ratio Definitions

V/C Ratio	Level of Service	Operating Condition
Less than 0.85	LOS A-C	Free-flow, very little, to moderate delay
Between 0.85 and 0.99	LOS D-E	Approaching or at capacity, users experience delays and queuing
Greater than 1.00	LOS F	Over capacity, severe delays and queuing

For a particular road link or section, a v/c ratio of less than 0.85 represents flow conditions in which little or acceptable delay is experienced. Between 0.85 and 0.99, as the link reaches capacity, congestion and a high amount of delay are experienced. At a v/c ratio of 1.00 or higher, there are stop-and-go conditions and traffic flow breaks down.

The key performance measure for this analysis is the volume to capacity ratio, where the roadway capacity (expressed in vehicles per hour) is based on the standardized road capacities in the Transportation Model, described previously.

5 Model Calibration

Based upon the most recent available observed traffic data (provided in **Appendix D1**), a model to observe comparison across screenlines throughout the Study Area was performed. Key screenlines considered are illustrated in **Exhibit 5-1** and provide a comprehensive review of model versus observed traffic in the Study Area.

Exhibit 5-1: Analysis Screenlines

To ensure reliable forecasts, the modeled traffic volumes compared to observed traffic using the GEH statistic, which is an empirical formula used specifically in traffic engineering and forecasting to compare the reliability of traffic volumes. The formula for the statistic is:

$$GEH = \sqrt{\frac{2(M-C)^2}{M+C}}$$

Where M is the hourly traffic volume from the model and C is the observed count.

Use of this statistic is particularly useful when comparing low volume roadways which can vary greatly when comparing on a percentage basis, but may not vary greatly in terms of absolute

numbers, which is particularly useful in this study area. Generally, a GEH value of less than 5 is ideal, less than 10 is acceptable, and greater than 10 is unacceptable.

For the NVNCTMP, the EMME model will be utilized as a tool to guide decisions, and as such a detailed calibration process is not utilized. The model is compared to observed traffic for screenline totals, and where the GEH value exceeds 10, an adjustment is applied to increase or decrease modelled traffic post-model to meet the GEH < 10 threshold. The same adjustment would then be applied to all future forecasts derived from the model.

Detailed screenline tables showing model to observed, GEH, and proposed adjustments for baseline 2031 forecasts are provided separately in **Appendix D2**.

6 2031 Baseline Forecast

The resulting 2031 baseline forecasts are provided in **Appendix D2**. These forecasts are based upon the Region's land use forecast and 2031 road network assumptions which are summarized in the following sections.

6.1 Land Use Forecasts and Growth

Between 2011 and 2031 the study area is expected to grow by an additional 32,900 residents and 22,100 jobs. The majority of the population and employment growth is attributed to Block 27 and 41 new communities and Block 34 and 35 employment lands, see **Exhibit 6-1**. A summary of historical and predicted population and employment estimates are presented in **Table 6-1** and **Table 6-2** respectively. It is noted that the City is considering modifying the baseline 2031 population and employment forecasts which will be considered in this study.

Exhibit 6-1: Study Area Block Plans

Table 6-1: Population Growth

Block / Area	2006 Population	2011 Population	2031 Population
Block 27	122	112	16,710
Block 41	285	281	10,180
Block 34 - Hwy 400 North Employment	309	292	1,054
Block 35 - Hwy 400 North Employment	163	142	137
Block 42	97	94	90
Block 28	67	49	47
Block 55-Kleinburg East	1,079	1,359	5,142
Rest of NVNCTMP Study Area	**4,908**	**6,385**	**6,592**
TOTAL NVNCTMP Study Area	**7,030**	**8,715**	**39,952**
City of Vaughan	**227,374**	**272,546**	**384,134**

Table 6-2: Employment Growth

Block / Area	2006 Employment	2011 Employment	2031 Employment
Block 27	9	28	3,165
Block 41	97	53	1,982
Block 34 - Hwy 400 North Employment	265	162	7,968
Block 35 - Hwy 400 North Employment	234	330	8,569
Block 42	0	0	0
Block 28	157	192	304
Block 55-Kleinburg East	380	389	803
Rest of NVNCTMP Study Area	385	759	813
TOTAL NVNCTMP Study Area	**1,526**	**1,913**	**23,604**
City of Vaughan	148,011	165,140	243,632

6.2 Road Network Assumptions

The 2031 road network assumptions documented in this memorandum are based upon the Region's latest 2031 assumptions, excluding the GTA West corridor and with Highway 427 terminating at Major Mackenzie Drive.

The Do-Nothing scenario for the NVNCTMP may not necessarily reflect these assumptions, and this scenario was only created to identify a baseline for comparison to determine the appropriate model calibration adjustment methodology.

The 2031 number of lanes assumptions are provided in **Exhibit 6-2**, free flow speeds in **Exhibit 6-3**, and capacities in **Exhibit 6-4**.

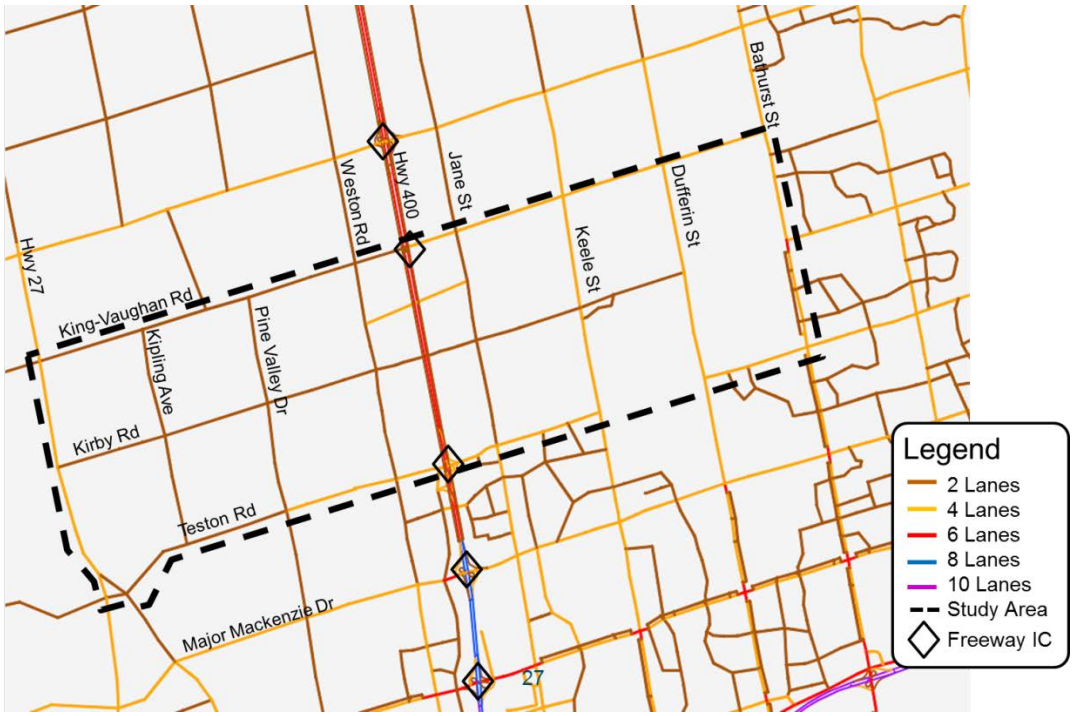


Exhibit 6-2: 2031 EMME Model Number of Lanes

Exhibit 6-3: 2031 EMME Model Free Flow Speeds

Exhibit 6-4: 2031 EMME Model Capacity Per Lane Per Hour

Some discrepancies are noted between the assumptions for 2011 and 2031. 2031 for example, has reduced free flow speeds which we are in agreement with as development will typically result in road reconstructions and urbanization to lower speeds. However, some capacity reductions were made in the 2031 model which we recommend to be reviewed further.

7 Intersection Analysis

Intersection capacity analysis is based the traffic counts and truck counts documented in **Appendix D1**. Synchro 8 software was utilized to assess intersection operations using Highway Capacity Manual (HCM) 2010 output for volume to capacity ratios and Level of Service (LOS.). This analysis for NVNCTMP study area intersections was conducted for the existing AM peak hour, and documented in **Appendix D3**. Additional analysis was conducted at Highway 400 ramp terminal intersections at Teston Road and Major Mackenzie Drive. Both AM and PM peak hours were assessed using HCM 2010 outputs and queue length analysis, and are documented in **Appendix D4**.

8 Interim Horizon Year Analysis

Two interim horizon years were selected to determine the timing of the improvements for the preferred Alternative. The horizon years of 2021 and 2026 were selected to coincide with the staging of recommended improvements from the York Region Transportation Master Plan

(2016). The York Region EMME model was used to estimate future travel demand for the traffic conditions of the interim horizon years.

8.1.1 Population and Employment Forecasts

Population and employment forecasts for the horizon years of 2021, 2026, and 2031 are presented in **Table 8-1** for Block 27 and **Table 8-2** for Block 41. The majority of growth will occur between 2021 and 2031 as this is spurred by the proposed Kirby GO Station opening in the horizon year 2026.

Table 8-1: Population and Employment Forecasts for Block 27

Quadrant	Population				Employment			
	2011	2021	2026	2031	2011	2021	2026	2031
North	-	197	1,583	2,968	-	191	398	604
South	-	1,006	8,079	15,152	-	162	337	512
East	-	296	2,374	4,452	-	287	597	906
West	-	251	2,020	3,788	-	40	84	128
Total	**110**	**1,750**	**14,056**	**26,360**	**30**	**680**	**1,416**	**2,150**

Table 8-2: Population and Employment Forecasts for Block 41

Quadrant	Population				Employment			
	2011	2021	2026	2031	2011	2021	2026	2031
Northwest	-	6	143	280	-	13	32	50
Northeast	-	147	3,365	6,583	-	190	449	707
Southwest	-	15	350	685	-	0	0	0
Southeast	-	102	2,336	4,569	-	66	157	247
Total	**280**	**270**	**6,194**	**12,117**	**50**	**269**	**638**	**1,004**

8.1.2 Interim Horizon Year 2021

The interim horizon year of 2021 includes the recommendations from the York Region TMP, which is illustrated in **Exhibit 8-1**. It is noted that the interim horizon year includes the full development of the collector network for Blocks 27, 34, 35, and 41 as the phasing and implementation of these networks are still under study.

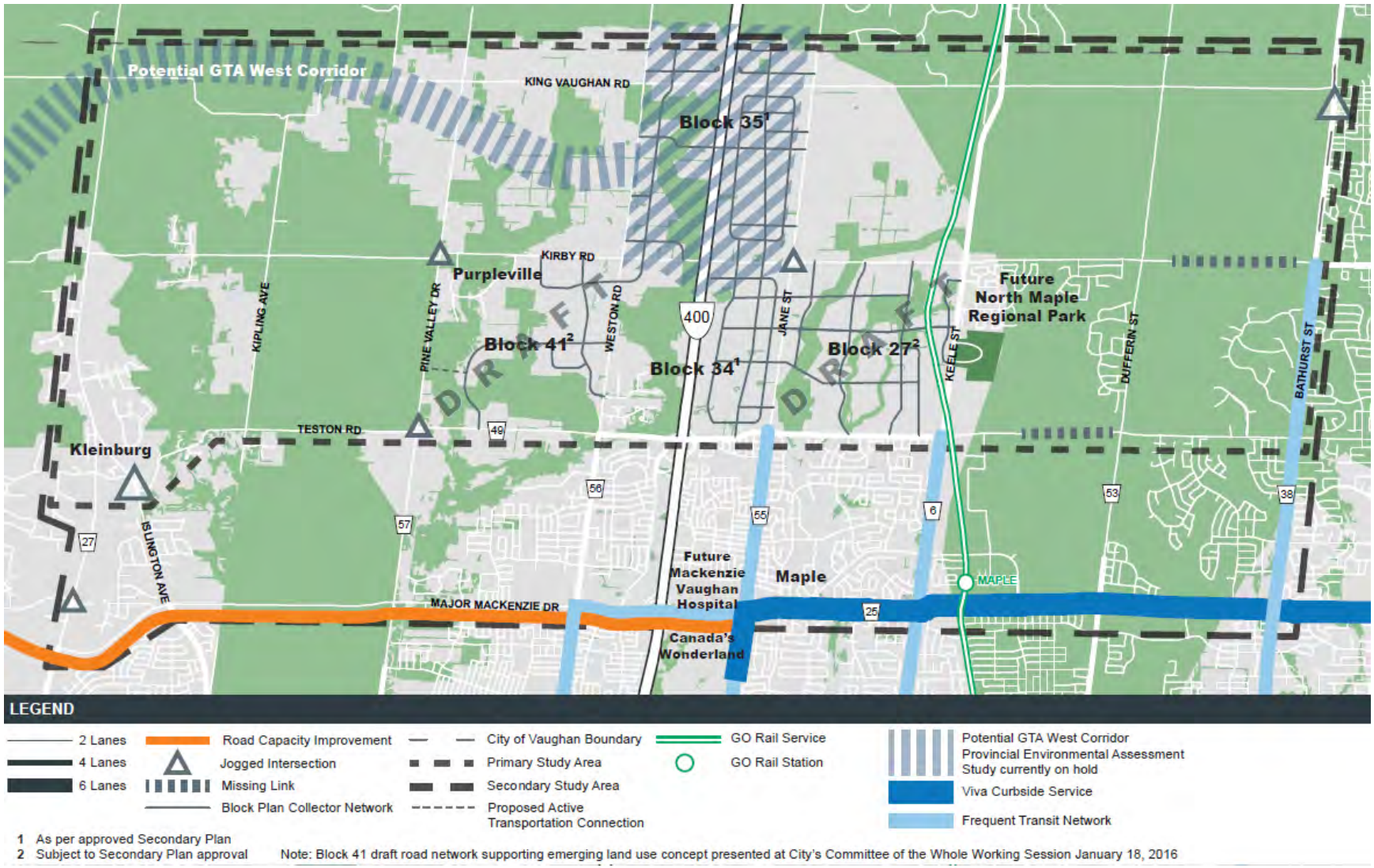


Exhibit 8-1: 2021 NVNCTMP Transportation Network (York Region TMP Recommended Phasing)

The major transportation improvements to the Study Area include:

- Widening of Major Mackenzie Drive from four to six lanes between the Peel-York Boundary and Jane Street,
- Viva curb side service on Major Mackenzie Drive from Jane Street to Leslie Street,
- Frequent Transit Network (FTN) service on:
  - Major Mackenzie Drive from west of Highway 27 to Jane Street,
  - Weston Road south of Major Mackenzie Drive,
  - Jane Street south of Teston Road,
  - Keele Street south of Teston Road, and
  - Bathurst Street south of Kirby Road.

With the planned Regional network and minimal development anticipated by 2021, no additional road improvements beyond those identified by the York Region TMP are required for the interim horizon year of 2021.

8.1.3 Interim Horizon Year 2026

The interim horizon year of 2026 follows the phasing of the recommendations from the York Region TMP. **Exhibit 8-2** illustrates the transportation network for the Study Area. It is noted that the interim horizon year includes the full development of the collector network for Blocks 27, 34, 35, and 41 as the phasing and implementation of these networks are still under study. The major transportation improvements to the Study Area, in addition to those from 212, are as follows:

- Road widening from two to four lanes of:
  - Highway 27 from Major Mackenzie Drive to King Road,
  - Pine Valley Drive from Major Mackenzie Drive to Teston Road,
  - Dufferin Road from north of Major Mackenzie Drive to Teston Road, and
  - Teston Road from Pine Valley Drive to Weston Road and from Keele Street to Yonge Street.
- Road widening from four to six lanes of Bathurst Street from Kirby Road to Highway 407,
- Connection of Teston Road from Keele Street to Dufferin Street,
- Grade separation of the Barrie GO Rail at Teston Road,
- Regional Express GO Rail Service (all-day 2-way service on the Barrie GO Line),
- Viva curb side service on Major Mackenzie Drive and Jane Street, and
- Frequent Transit Network (FTN) service on:
  - Bathurst Street throughout the Study Area.

The York Region TMP did not include the Kirby GO Station by the horizon year 2026 as it was not confirmed until June of 2016 by Metrolinx. It was included in the Board of Directors Report for the GO Regional Express Rail (RER) 10-Year Program and will coincide with the introduction of all-day two-way service at a service frequency of every 15 minutes. **Exhibit 8-3** illustrates the EMME output for the horizon year 2026, with the bar thickness indicating auto volume and bar colour indicating v/c ratio (yellow is congested and approaching capacity, red is severely congested and over capacity).

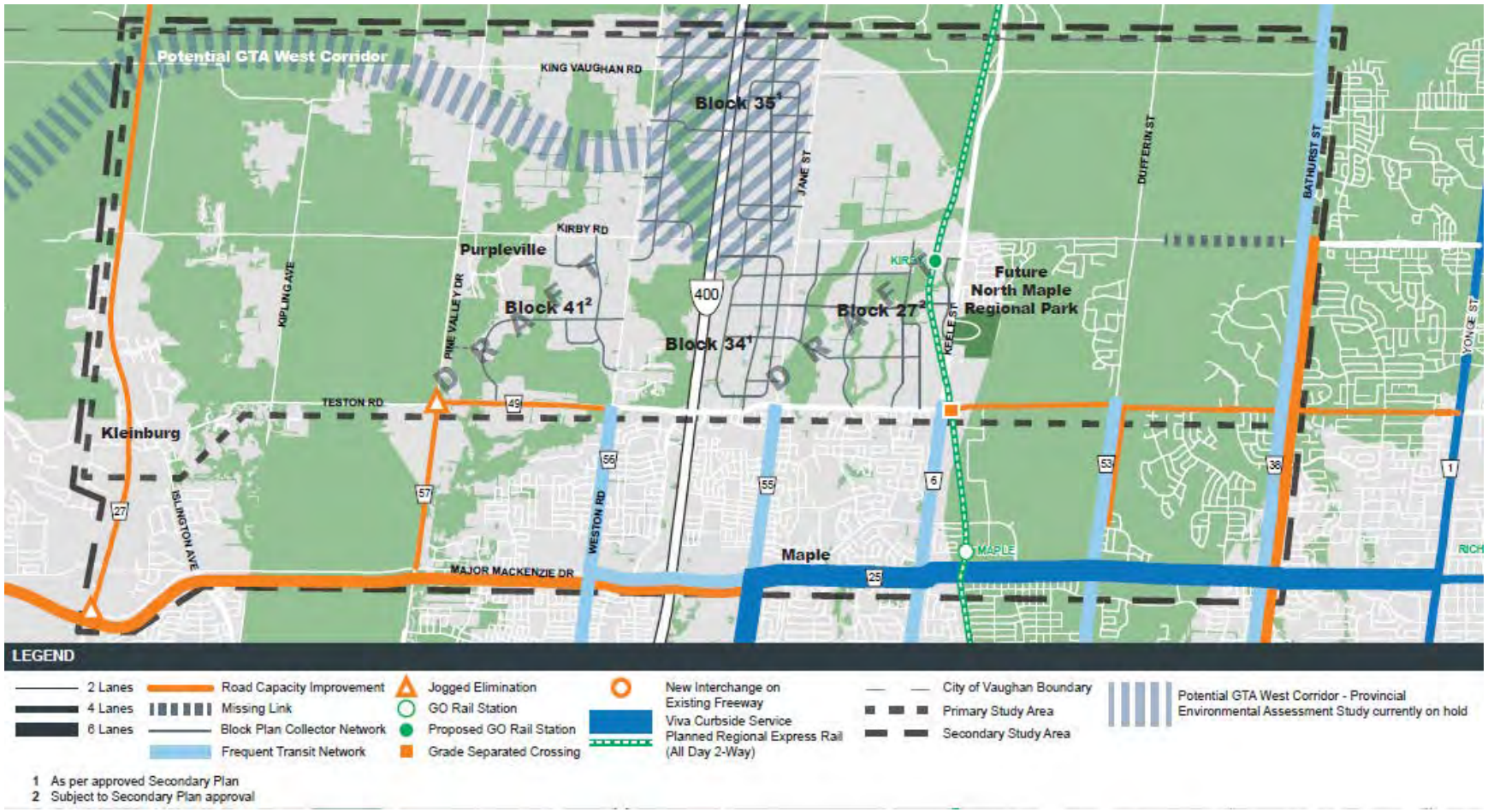


Exhibit 8-2: 2026 NVNCTMP Transportation Network (York Region TMP Recommended Phasing)

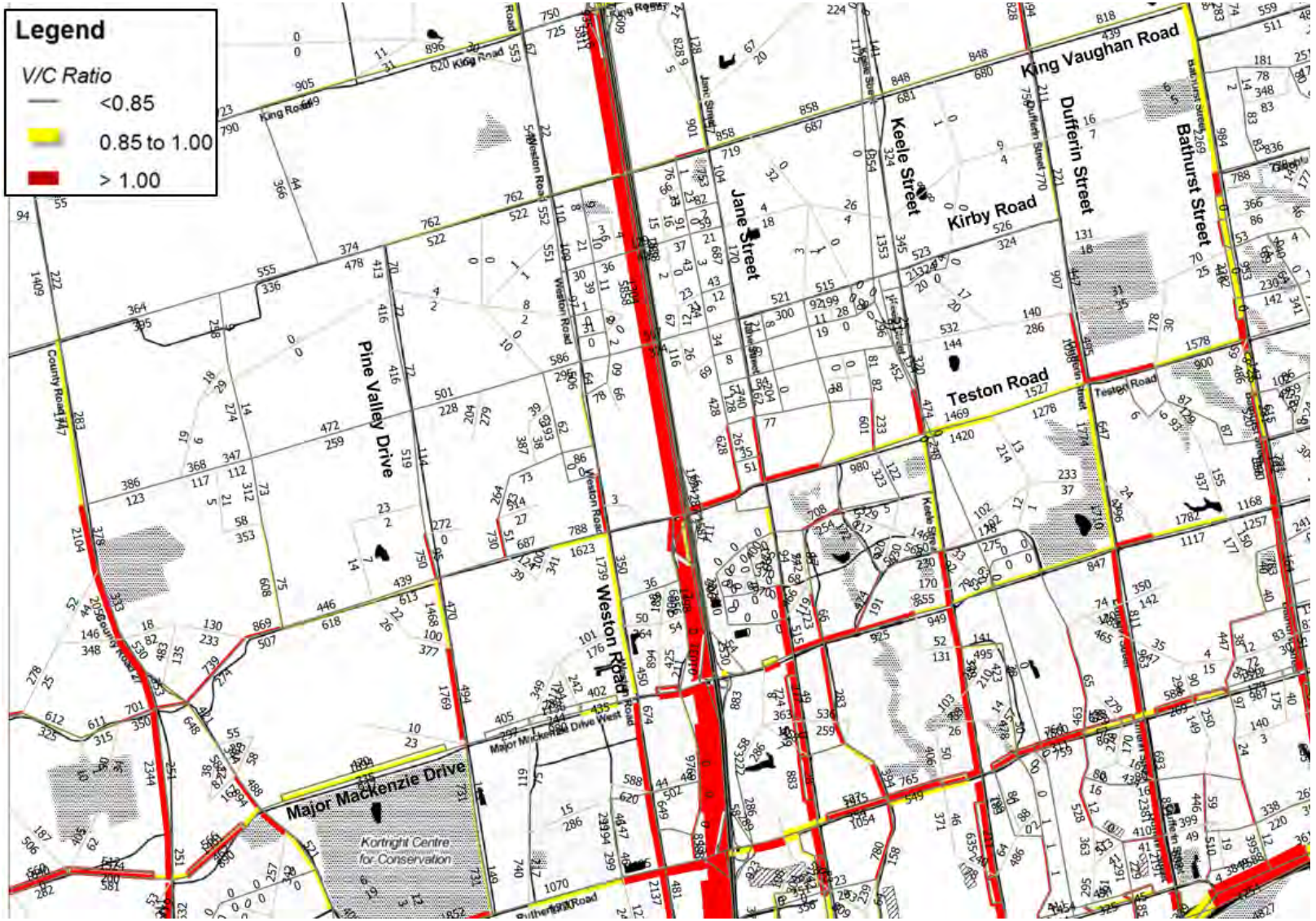


Exhibit 8-3: V/C and Auto Volume EMME Plot – 2026 Network

The plot shows significant congestion for traffic approaching Highway 400. Generally, east-west arterial roads in the study area experience significant congestion. There is also significant southbound traffic beginning north of Teston Road.

Kirby GO Station will attract approximately 1,300 riders in the peak hour and without improvements to Kirby Road by 2026, there will be significant congestion. As no improvements have been made to Kirby Road, there is no direct connection to the Kirby GO Station from the west. As a result, traffic must use parallel east-west routes that experience significant congestion, including King-Vaughan Road and Teston Road

8.1.3.1 KIRBY ROAD IMPROVEMENTS PHASING

A sensitivity analysis for the horizon year of 2026 was conducted to determine the operational effect of advancing the phasing of the improvements for Kirby Road from 2031 to 2026 to coincide with the opening of the Kirby GO Station. The improvements that would be advanced include:

- Highway 400 interchange at Kirby Road,
- Widening of Kirby Road from two to four lanes between Weston Road and Dufferin Street,
- Construction of a four lane road (Kirby Road missing link, currently undergoing an EA study by Rizmi Holdings Limited) between Dufferin Road and Bathurst Street,
- Grade separation of Barrie GO Rail at Kirby Road, and
- Frequent Transit Network service on:
  - Kirby Road east of Weston Road,
  - Weston Road south of Kirby Road,
  - Jane Street south of Kirby Road,
  - Keele Street south of Kirby Road, and
  - Dufferin Street south of Kirby Road.

The advancement of these projects would improve connectivity to the Kirby GO Station for all modes. **Exhibit 8-4** illustrates the 2026 transportation network with the advanced improvements.

Exhibit 8-5 shows the EMME plot for the Study Area. When compared to **Exhibit 8-3**, the addition of the Kirby Road missing link helps alleviate traffic from parallel roads as it has diverted over 850 vehicles from the same area on King Vaughan Road and Teston Road. Throughout the Study Area, the widening of Kirby Road has also helped alleviate traffic from Teston Road.

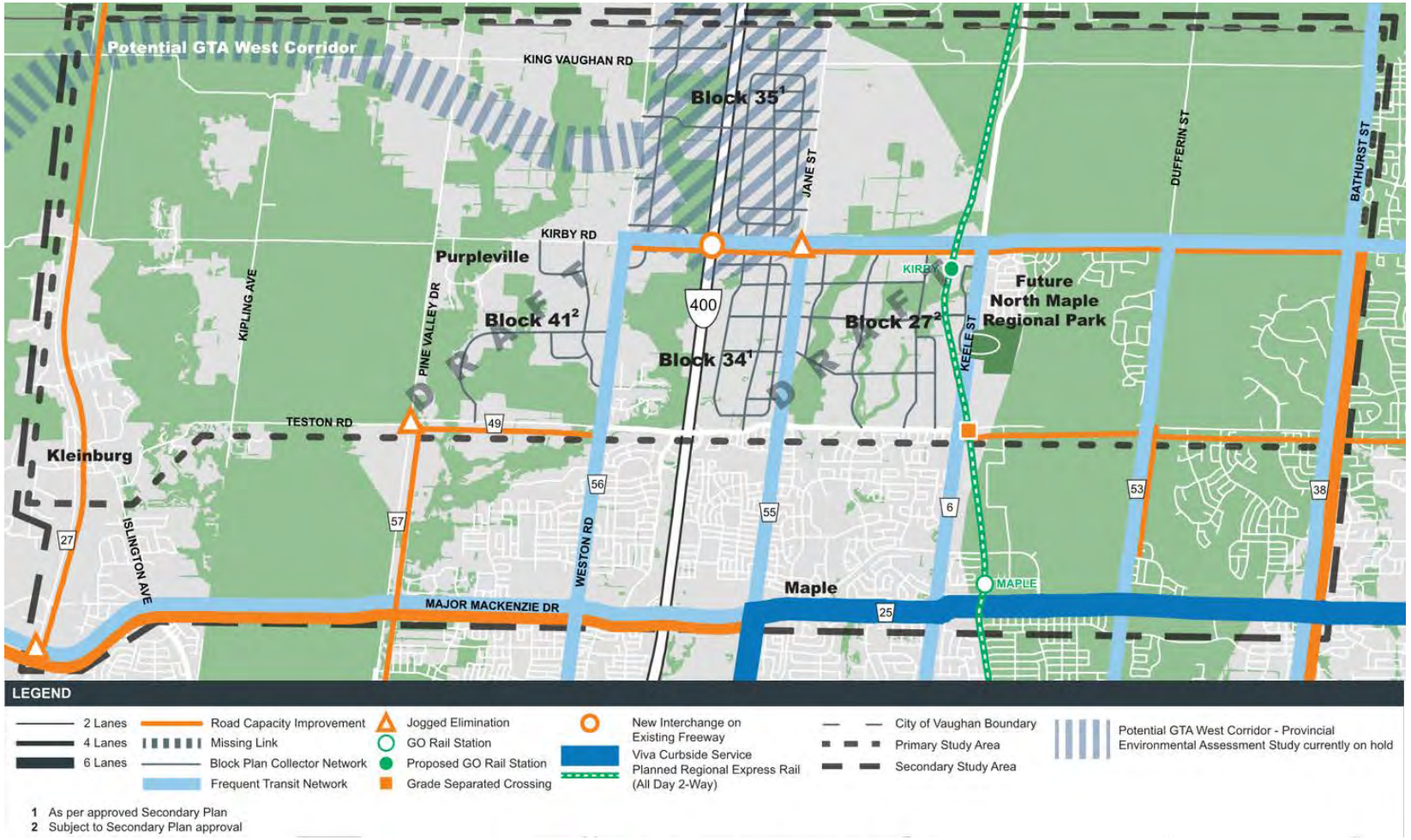


Exhibit 8-4: 2026 NVNCTMP Transportation Network (York Region TMP Recommended Phasing + Advancements)

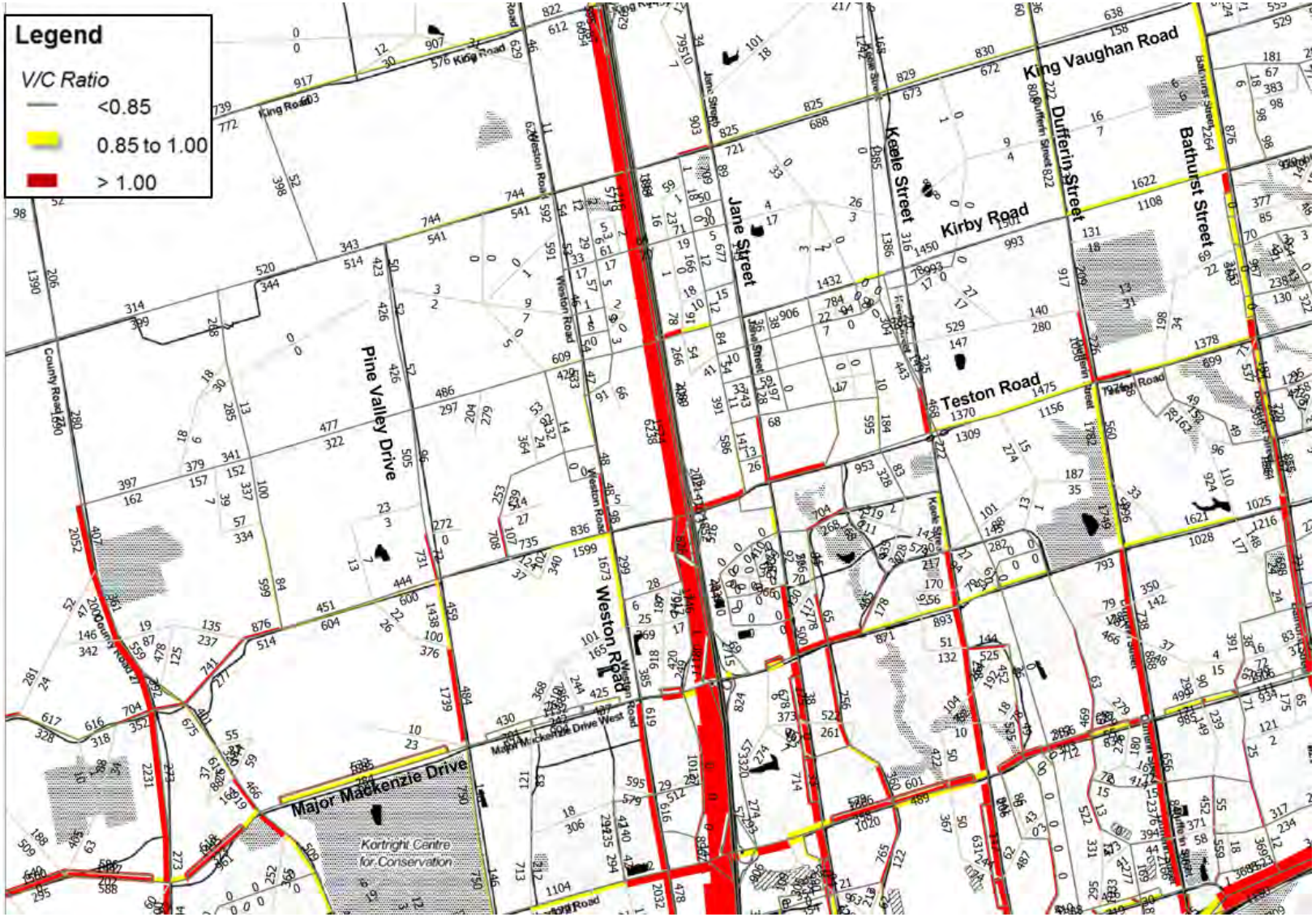


Exhibit 8-5: V/C and Auto Volume EMME Plot – 2026 Network with Advancements

An evaluation between this scenario and the recommended phasing for 2021 based on the York Region TMP was conducted to determine the effectiveness of the recommended improvements based on delay in the Study Area. **Table 8-3** illustrates the percentage of VKT and VHT that is congested (v/c ratio ≥ 1.00) within the Study Area.

The advancements of the Kirby Road improvements minimizes the kilometres travelled and hours spent in congestion compared to the recommended phasing of the York Region TMP. Without the advancements of the Kirby Road improvements, almost 4,000 extra kilometres are spent in congestion. This translates to an additional 200 hours spent in congestion overall in the Study Area.

Table 8-3: Study Area Delay of Strategy 2 and Sensitivity Strategies

Arterial + Local Roads	2026 York Region TMP	2026 York Region TMP Plus Kirby Road Advancements
Congested VKT	38,800	35,000
% Congested	20%	17%
Congested VHT	1,700	1,500
% Congested	32%	27%

8.1.4 Implementation Plan

Based on this Chapter, **Table 8-4** illustrates the projects in the study area, their recommended phasing based on the York Region TMP, and the recommended advanced phasing, if applicable. Projects highlighted in **bold font** are under City jurisdiction or are recommended advancements in timing (relative to York Region TMP).

Table 8-4: Implementation Plan for Projects within the Study Area

Project	Jurisdiction	York Region TMP Recommended Phasing	Recommended Timing
Block 27 Collector Roads	**City of Vaughan**	**-**	**By 2026**
Block 41 Collector Roads	**City of Vaughan**	**-**	**By 2026**
Cycling Facilities - Kirby Road, Highway 27 to Bathurst Street	**City of Vaughan**	**-**	**2017 - 2026**
Dedicated Viva Rapidway - Major Mackenzie Drive	York Region	2027 - 2031	York TMP
Frequent Transit Network - Kirby Road	**York Region**	**2028 - 2031**	**2017 - 2026**
Frequent Transit Network - Bathurst Street	York Region	2017 - 2021	York TMP
Frequent Transit Network - Dufferin Street	**York Region**	**2027 - 2031**	**2017 - 2026**
Frequent Transit Network - Highway 27	York Region	2027 - 2031	York TMP
Frequent Transit Network - Jane Street	York Region	2022 - 2026	York TMP
Frequent Transit Network - Keele Street	York Region	2022 - 2026	York TMP
Frequent Transit Network - Major Mackenzie Drive	York Region	2017 - 2021	York TMP
Frequent Transit Network - Pine Valley Drive	York Region	2027 - 2031	York TMP
Frequent Transit Network - Teston Road	York Region	2027 - 2031	York TMP
Frequent Transit Network - Weston Road	**York Region**	**2027 - 2031**	**2017 - 2026**
Grade Separation - Kirby Road - Barrie Rail Corridor	**Metrolinx + York Region + City of**	**2027 - 2031**	**2017 - 2026**

Project	Jurisdiction	York Region TMP Recommended Phasing	Recommended Timing
	Vaughan		
Grade Separation - Teston Road - Barrie Rail Corridor	Metrolinx + York Region	2022 - 2026	York TMP
Highway 400 Interchange at Kirby Road	**MTO**	**2027 - 2031**	**2017 - 2026**
Highway 400 Midblock Crossing, between Major Mackenzie Drive and Teston Road (4 lanes)	York Region + City of Vaughan	2027 - 2031	York TMP
Highway 400 Midblock Crossing, between Teston Road and King-Vaughan Road (at least one, 4 lanes)	York Region + City of Vaughan	2027 - 2031	York TMP
Jog Elimination - Kirby Road and Jane Street	York Region + City of Vaughan	2027 - 2031	York TMP
Jog Elimination - Major Mackenzie Road and Highway 27	York Region	2017 - 2021	York TMP
Jog Elimination - Teston Road and Pine Valley Drive	York Region	2022 - 2026	York TMP
Kirby GO Station	Metrolinx	2017 - 2026	York TMP
Regional Express Rail - Barrie Corridor	Metrolinx	2017 - 2026	York TMP
Road Reconstruction - Kirby Road, Highway 27 to Weston Road	**City of Vaughan**	**-**	**2027 - 2031**
Road Reconstruction - Pine Valley Drive, Teston Road to Kirby Road	**City of Vaughan**	**-**	**2027 - 2031**
Widening - Bathurst Street, Major Mackenzie Drive to Kirby Road (6 lanes)	York Region	2022 - 2026	York TMP
Widening - Dufferin Street, north of Major Mackenzie Drive to Teston Road (4 lanes)	York Region	2022 - 2026	York TMP
Widening - Highway 27, Major Mackenzie Drive to North City Limit (4 lanes)	York Region	2022 - 2026	York TMP
Widening - Jane Street, Teston Road to Kirby Road (4 lanes)	York Region	2027 - 2031	York TMP
Widening - Kirby Road, Weston Road to Bathurst Street (4 lanes)	**York Region + City of Vaughan**	**2027 - 2031**	**2017 - 2026**
Widening - Major Mackenzie Road, Jane Street to Highway 27 (6 lanes)	York Region	2017 - 2021	York TMP
Widening - Pine Valley Drive, Major Mackenzie Road to Teston Road (4 lanes)	York Region	2022 - 2026	York TMP
Widening - Teston Road, Keele Street to Bathurst Road (4 lanes)	York Region	2022 - 2026	York TMP
Widening - Teston Road, Pine Valley Drive to Weston Road (4 lanes)	York Region	2022 - 2026	York TMP
Widening - Weston Road, Teston Road to Kirby Road (4 lanes)	York Region	2027 - 2031	York TMP

Appendix D1

Traffic/Truck Count Summary

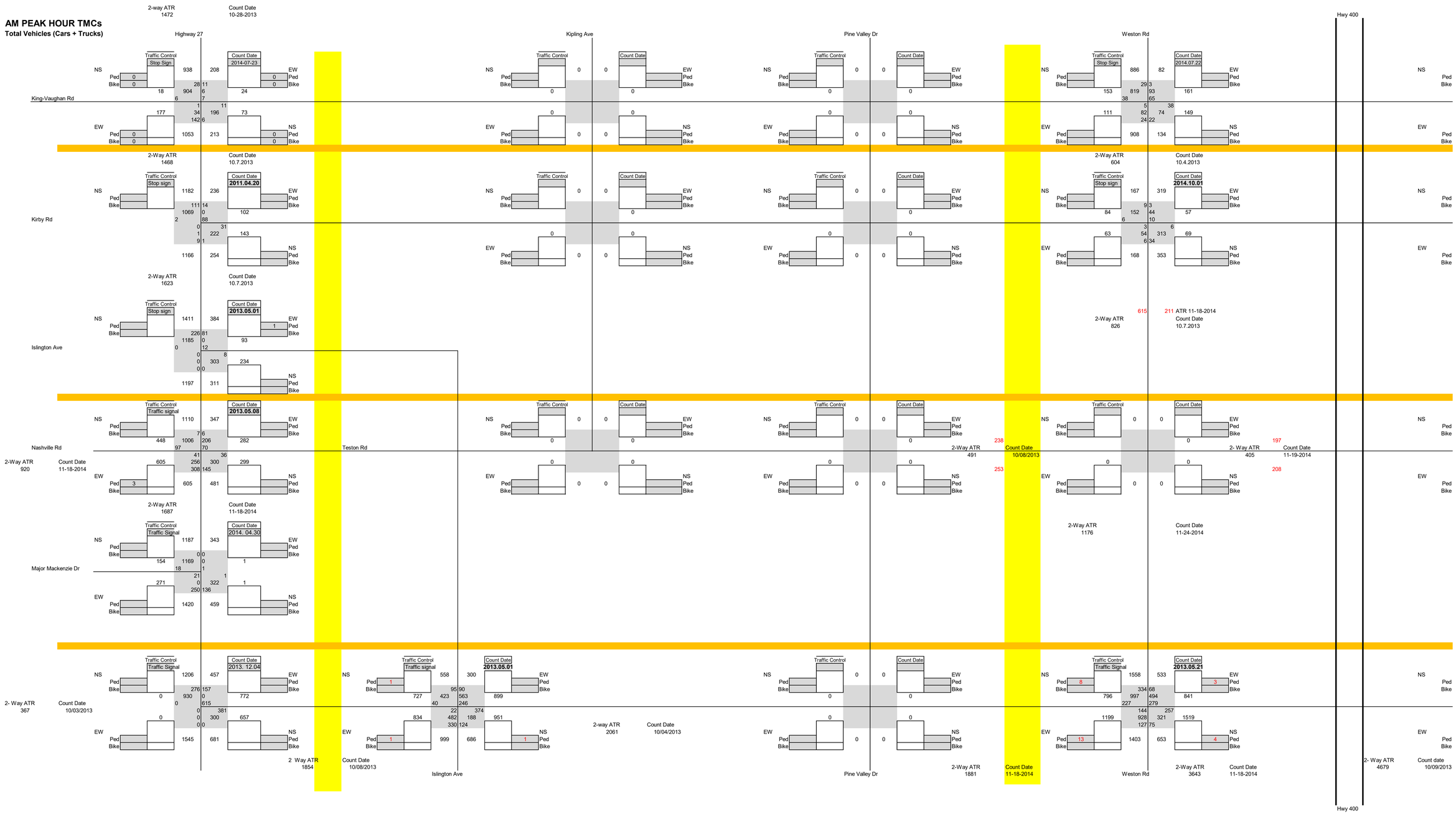
hdrinc.com 100 York Boulevard, Suite 300, Richmond Hill, ON, CA L4B 1J8
(289) 695-4600

Project: North Vaughan and New Communities TMP
Subject: Phase 1 Report Appendix F
Task: Traffic Counts
Job #: 257831

Computed by: Chai, Jonathan Date:08/01/2016
Checked by: ES Date: Date:08/01/2016
Workbook: 2016-01-08 Screenline Traffic-v6.xlsx, Traffic Count Summary

AM PEAK HOUR TMCs

Total Vehicles (Cars + Trucks)



Project: North Vaughan and New Communities TMP
Subject: Phase 1 Report Appendix F
Task: Traffic Counts
Job #: 257831

Computed by: Chai, Jonathan Date:08/01/2016
Checked by: ES Date: Date:08/01/2016
Workbook: 2016-01-08 Screenline Traffic-v6.xlsx, Traffic Count Summary
Page: 2 of 2

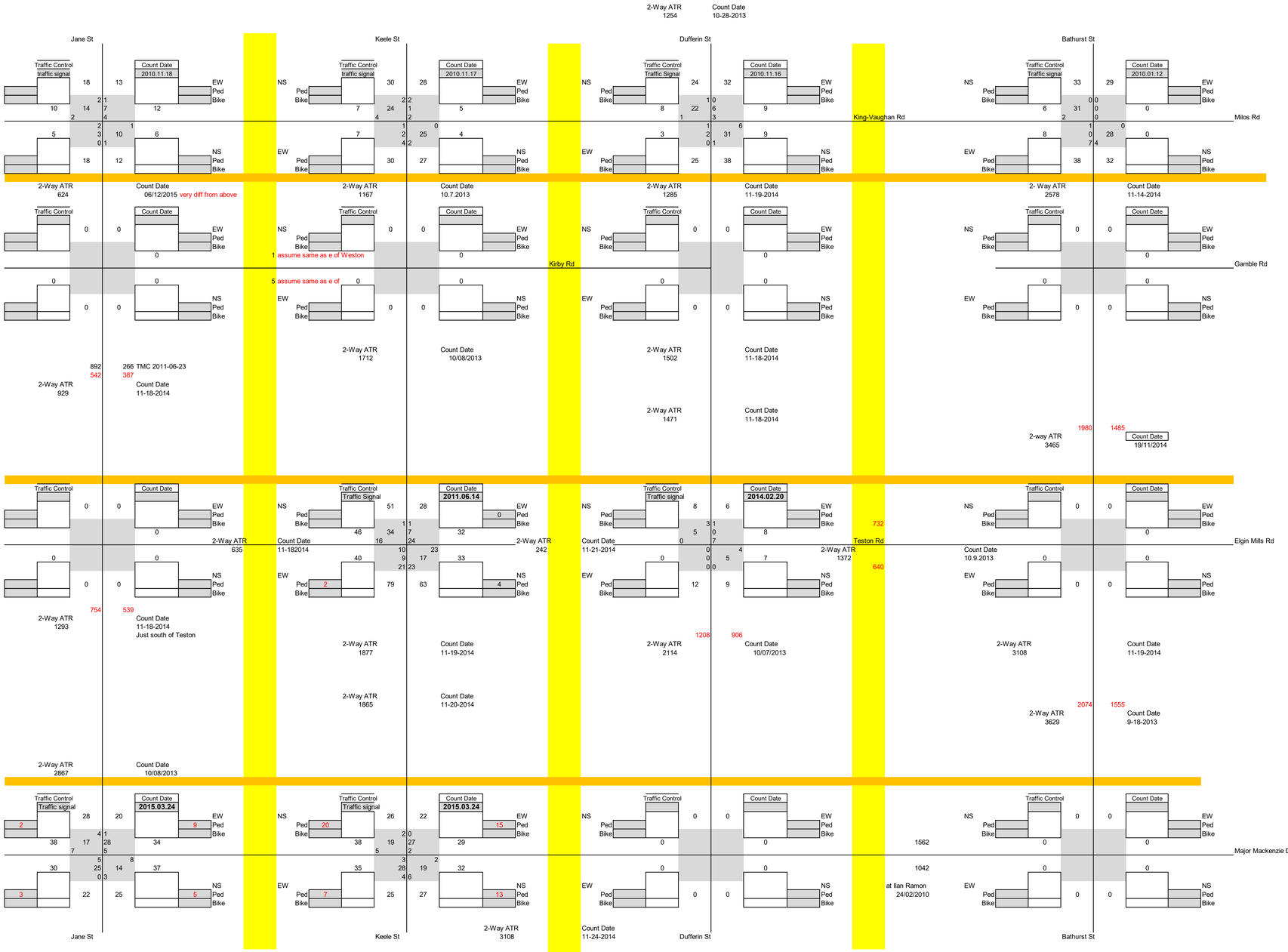
C:\Users\jchai\Documents\Work Stuff\North Vaughan TMP\Analysis\Screenline Analysis\2016-01-08 Screenline Traffic-v6.xlsx

Project: North Vaughan and New Communities TMP
Subject: Phase 1 Report Appendix F
Task: Truck Counts
Job #: 257831

Computed by: Date:08/01/2016
Checked by: ES Date: Date:08/01/2016
Workbook: 2016-01-08 Screenline Traffic-v6.xlsx, Truck Count Summary

AM PEAK HOUR TMCs
Total TRUCKS

C:\Users\jchal\Documents\Work Stuff\North Vaughan TMP\Analysis\Screenline Analysis\2016-01-08 Screenline Traffic-v6.xlsx



C:\Users\jchal\Documents\Work Stuff\North Vaughan TMP\Analysis\Screenline Analysis\2016-01-08 Screenline Traffic-v6.xlsx

Appendix D2

Screenline Traffic Calibration and Forecasts

hdrinc.com 100 York Boulevard, Suite 300, Richmond Hill, ON, CA L4B 1J8
(289) 695-4600

Project: North Vaughan and New Communities TMP
Subject: Phase 1 Report - Appendix E
Task: Existing and Future Screenline Analysis
Job #: 257831

Computed by: Date:08/01/2016
Checked by: ES Date: Date:08/01/2016]
Workbook: 2016-01-08 Screenline Traffic-v6.xlsx, Screenline Table
Page:

	Calibration										Unadjusted		Count + Model Growth				Capacity					
AM PEAK HR TRAFFIC	Count volume		Existing V/C		2011 Model volume		Model / Observed		GEH		2031 Model volume		2031 Forecast		2031 V/C		2011			2031		
E-W Screenlines	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	Lanes (one-way)	Lane Capacity	Link Capacity	Lanes (one-way)	Lane Capacity	Link Capacity
East of Highway 27																						
King-Vaughan Rd	73	24	0.07	0.02	540	245	640%	921%	27	19	358	42	73	24	0.10	0.03	1	1,000	1,000	1	700	700
Kirby Rd	143	102	0.14	0.10	22	65	-85%	-36%	13	4	225	423	346	460	0.49	0.66	1	1,000	1,000	1	700	700
Teston Rd	299	282	0.43	0.40	423	590	41%	109%	7	15	440	865	316	557	0.45	0.80	1	700	700	1	700	700
Major Mackenzie Dr	657	772	0.94	1.10	614	745	-7%	-3%	2	1	955	1,408	998	1,435	0.71	1.03	1	700	700	2	700	1,400
TOTAL	**1,172**	**1,180**	**0.34**	**0.35**	**1,599**	**1,645**	**36%**	**39%**	**11**	**12**	**1,978**	**2,738**	**1,733**	**2,476**	**0.50**	**0.71**	**4**	**3,400**	**3,400**	**5**	**2,800**	**3,500**
TOTAL North	**216**	**126**	**0.11**	**0.06**	**562**	**310**	**160%**	**146%**			**583**	**465**	**419**	**484**	**0.30**	**0.35**	**2**	**2,000**	**2,000**	**2**	**1,400**	**1,400**
TOTAL South	**956**	**1,054**	**0.68**	**0.75**	**1,037**	**1,335**	**8%**	**27%**			**1,395**	**2,273**	**1,314**	**1,992**	**0.63**	**0.95**	**2**	**1,400**	**1,400**	**3**	**1,400**	**2,100**
West of Weston Rd																						
King-Vaughan Rd	111	153	0.11	0.15	391	514	252%	236%	18	20	498	553	218	192	0.27	0.24	1	1,000	1,000	1	800	800
Kirby Rd	63	84	0.09	0.12	19	176	-70%	110%	7	8	482	327	526	235	0.75	0.34	1	700	700	1	700	700
Teston Rd	253	238	0.18	0.17	675	521	167%	119%	20	15	1,578	883	1,156	600	0.83	0.43	2	700	1,400	2	700	1,400
Major Mackenzie Dr	1,199	796	1.33	0.88	837	480	-30%	-40%	11	13	1,573	1,355	1,935	1,671	1.08	0.93	1	900	900	2	900	1,800
TOTAL	**1,626**	**1,271**	**0.41**	**0.32**	**1,922**	**1,691**	**18%**	**33%**	**7**	**11**	**4,131**	**3,118**	**3,835**	**2,698**	**0.82**	**0.57**	**5**	**3,300**	**4,000**	**6**	**3,100**	**4,700**
TOTAL North	**174**	**237**	**0.10**	**0.14**	**410**	**690**	**136%**	**191%**			**980**	**880**	**744**	**427**	**0.50**	**0.28**	**2**	**1,700**	**1,700**	**2**	**1,500**	**1,500**
TOTAL South	**1,452**	**1,034**	**0.63**	**0.45**	**1,512**	**1,001**	**4%**	**-3%**			**3,151**	**2,238**	**3,091**	**2,271**	**0.97**	**0.71**	**3**	**1,600**	**2,300**	**4**	**1,600**	**3,200**
West of Highway 400																						
King-Vaughan Rd	149	161	0.17	0.18	343	646	130%	301%	12	24	522	800	328	315	0.41	0.39	1	900	900	1	800	800
New Link											56	27	56	27	0.05	0.02	0	0	0	2	600	1,200
Kirby Rd	69	57	0.08	0.06	12	261	-83%	358%	9	16	511	434	568	230	0.81	0.33	1	900	900	1	700	700
Teston Rd (W of Keystar)	208	197	0.12	0.11	800	589	284%	200%	26	20	1,883	1,278	1,291	886	0.72	0.49	2	900	1,800	2	900	1,800
New Link											266	540	266	540	0.22	0.45	0	0	0	2	600	1,200
Major Mackenzie Dr	1,519	841	0.84	0.47	1,855	857	22%	2%	8	1	2,043	1,820	1,707	1,804	0.63	0.67	2	900	1,800	3	900	2,700
TOTAL	**1,945**	**1,256**	**0.36**	**0.23**	**3,010**	**2,353**	**55%**	**87%**	**21**	**26**	**5,281**	**4,899**	**4,216**	**3,802**	**0.50**	**0.45**	**6**	**3,600**	**5,400**	**11**	**4,500**	**8,400**
TOTAL North	**218**	**218**	**0.12**	**0.12**	**355**	**907**	**63%**	**316%**			**1,089**	**1,261**	**952**	**572**	**0.35**	**0.21**	**2**	**1,800**	**1,800**	**4**	**2,100**	**2,700**
TOTAL South	**1,727**	**1,038**	**0.48**	**0.29**	**2,655**	**1,446**	**54%**	**39%**			**4,192**	**3,638**	**3,264**	**3,230**	**0.57**	**0.57**	**4**	**1,800**	**3,600**	**7**	**2,400**	**5,700**
East of Highway 400																						
King-Vaughan Rd	107	162	0.12	0.18	343	646	221%	299%	16	24	1,391	1,589	1,155	1,105	0.72	0.69	1	900	900	2	800	1,600
New Link											56	27	56	27	0.05	0.02	0	0	0	2	600	1,200
Kirby Rd	69	57	0.10	0.08	12	261	-83%	358%	9	16	511	434	568	230	0.81	0.33	1	700	700	1	700	700
Teston Rd	619	817	0.34	0.45	494	1,523	-20%	86%	5	21	1,989	1,431	2,114	817	1.17	0.45	2	900	1,800	2	900	1,800
New Link											266	540	266	540	0.22	0.45	0	0	0	2	600	1,200
Major Mackenzie Dr	1,680	2,118	0.93	1.18	1,204	1,878	-28%	-11%	13	5	1,369	1,742	1,845	2,118	1.03	1.18	2	900	1,800	2	900	1,800
TOTAL	**2,475**	**3,154**	**0.48**	**0.61**	**2,053**	**4,308**	**-17%**	**37%**	**9**	**19**	**5,582**	**5,763**	**6,004**	**4,837**	**0.72**	**0.58**	**6**	**3,400**	**5,200**	**11**	**4,500**	**8,300**
TOTAL North	**176**	**219**	**0.11**	**0.14**	**355**	**907**	**102%**	**314%**			**1,958**	**2,050**	**1,779**	**1,362**	**0.51**	**0.39**	**2**	**1,600**	**1,600**	**5**	**2,100**	**3,500**
TOTAL South	**2,299**	**2,935**	**0.64**	**0.82**	**1,698**	**3,401**	**-26%**	**16%**			**3,624**	**3,713**	**4,225**	**3,475**	**0.88**	**0.72**	**4**	**1,800**	**3,600**	**6**	**2,400**	**4,800**
East of Jane St																						
King-Vaughan Rd	199	253	0.22	0.28	580	775	191%	206%	19	23	1,204	1,714	823	1,192	0.46	0.66	1	900	900	2	900	1,800
Kirby Rd	69	57	0.10	0.08	9	457	-87%	702%	10	25	367	676	427	276	0.61	0.39	1	700	700	1	700	700
Teston Rd	619	817	0.34	0.45	441	1,227	-29%	50%	8	13	963	1,807	1,141	1,397	0.63	0.78	2	900	1,800	2	900	1,800
Major Mackenzie Dr	1,396	1,599	0.78	0.89	1,089	1,627	-22%	2%	9	1	1,370	1,676	1,677	1,648	0.93	0.92	2	900	1,800	2	900	1,800
TOTAL	**2,283**	**2,726**	**0.44**	**0.52**	**2,119**	**4,086**	**-7%**	**50%**	**3**	**23**	**3,904**	**5,873**	**4,068**	**4,513**	**0.67**	**0.74**	**6**	**3,400**	**5,200**	**7**	**3,400**	**6,100**
TOTAL North	**268**	**310**	**0.17**	**0.19**	**589**	**1,232**	**120%**	**297%**			**1,571**	**2,390**	**1,250**	**1,468**	**0.50**	**0.59**	**2**	**1,600**	**1,600**	**3**	**1,600**	**2,500**
TOTAL South	**2,015**	**2,416**	**0.56**	**0.67**	**1,530**	**2,854**	**-24%**	**18%**			**2,333**	**3,483**	**2,818**	**3,045**	**0.78**	**0.85**	**4**	**1,800**	**3,600**	**4**	**1,800**	**3,600**
East of Keele St																						
King-Vaughan Rd	130	291	0.14	0.32	601	879	362%	202%	25	24	1,304	1,760	833	1,172	0.46	0.65	1	900	900	2	900	1,800
Kirby Rd	69	57	0.08	0.06	24	587	-65%	930%	7	30	428	568	473	57	0.68	0.08	1	900	900	1	700	700
Teston Rd																						0
Major Mackenzie Dr	1,499	1,563	0.94	0.98	757	1,463	-49%	-6%	22	3	894	1,502	1,636	1,602	1.02	1.00	2	800	1,600	2	800	1,600
TOTAL	**1,698**	**1,911**	**0.50**	**0.56**	**1,382**	**2,929**	**-19%**	**53%**	**8**	**21**	**2,626**	**3,830**	**2,942**	**2,831**	**0.72**	**0.69**	**4**	**2,600**	**3,400**	**5**	**2,400**	**4,100**
TOTAL North	**199**	**348**	**0.11**	**0.19**	**625**	**1,466**	**214%**	**321%**			**1,732**	**2,328**	**1,306**	**1,229**	**0.52**	**0.49**	**2**	**1,800**	**1,800**	**3**	**1,600**	**2,500**
TOTAL South	**1,499**	**1,563**	**0.94**	**0.98**	**757**	**1,463**	**-49%**	**-6%**			**894**	**1,502**	**1,636**	**1,602**	**1.02**	**1.00**	**2**	**800**	**1,600**	**2**	**800**	**1,600**
West of Bathurst St																						
King-Vaughan Rd	167	279	0.19	0.31	141	771	-16%	176%	2	21	610	1,321	636	829	0.35	0.46	1	900	900	2	900	1,800
Kirby Rd																						0
Teston Rd	399	973	0.50	1.22	229	364	-43%	-63%	10	24	756	735	926	1,344	0.58	0.84	1	800	800	2	800	1,600
Major Mackenzie Dr	1,042	1,562	0.58	0.87	1,027	1,282	-1%	-18%	0	7	1,295	1,147	1,310	1,562	0.73	0.87	2	900	1,800	2	900	1,800
TOTAL	**1,608**	**2,814**	**0.46**	**0.80**	**1,397**	**2,417**	**-13%**	**-14%**	**5**	**8**	**2,661**	**3,203**	**2,872**	**3,735**	**0.55**	**0.72**	**4**	**2,600**	**3,500**	**6**	**2,600**	**5,200**
TOTAL North	**167**	**279**	**0.19**	**0.31**	**141**	**771**	**-16%**	**176%**			**610**	**1,321**	**636**	**829**	**0.35**	**0.46**	**1**	**900**	**900**	**2**	**900**	**1,800**
TOTAL South	**1,441**	**2,535**	**0.55**	**0.97**	**1,256**	**1,646**	**-13%**	**-35%**			**2,051**	**1,882**	**2,236**	**2,906**	**0.66**	**0.85**	**3**	**1,700**	**2,600**	**4**	**1,700**	**3,400**

Project: North Vaughan and New Communities TMP
Subject: Phase 1 Report - Appendix E
Task: Existing and Future Screenline Analysis
Job #: 257831

Computed by: Date:08/01/2016
Checked by: ES Date: Date:08/01/2016]
Workbook: 2016-01-08 Screenline Traffic-v6.xlsx, Screenline Table
Page:

AM PEAK HR TRAFFIC	Calibration										Unadjusted		Count + Model Growth				Capacity					
	Count volume		Existing V/C		2011 Model volume		Model / Observed		GEH		2031 Model volume		2031 Forecast		2031 V/C		2011			2031		
N-S Screenlines	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	Lanes (one-way)	Lane Capacity	Link Capacity	Lanes (one-way)	Lane Capacity	Link Capacity
South of King-Vaughan Rd																						
Hwy 27	1,053	213	1.05	0.21	874	193	-17%	-9%	6	1	1,487	175	1,666	213	0.83	0.11	1	1,000	1,000	2	1,000	2,000
Kipling Ave	198	156	0.20	0.16	357	0	80%	-100%	10	18	576	3	417	159	0.42	0.16	1	1,000	1,000	1	1,000	1,000
Pine Valley Dr	198	156	0.20	0.16	411	0	108%	-100%	12	18	569	78	356	234	0.36	0.23	1	1,000	1,000	1	1,000	1,000
Weston Rd	908	134	0.91	0.13	739	65	-19%	-51%	6	7	831	105	1,000	174	1.00	0.17	1	1,000	1,000	1	1,000	1,000
Hwy 400	5,498	1,735	1.02	0.32	5,498	1,735	0%	0%	-	-	7,572	2,720	7,572	2,720	1.15	0.41	3	1,800	5,400	4	1,650	6,600
Jane St	964	121	0.96	0.12	756	70	-22%	-42%	7	5	1,050	109	1,258	160	1.26	0.16	1	1,000	1,000	1	1,000	1,000
Keele St	1,037	311	0.52	0.16	1,442	232	39%	-25%	12	5	1,419	317	1,037	396	0.58	0.22	2	1,000	2,000	2	900	1,800
Dufferin St	885	325	0.89	0.33	829	154	-6%	-53%	2	11	1,428	411	1,484	582	0.82	0.32	1	1,000	1,000	2	900	1,800
Bathurst St	996	870	0.42	0.36	1,831	1,448	84%	66%	22	17	2,507	1,670	1,672	1,092	0.70	0.46	2	1,200	2,400	2	1,200	2,400
TOTAL	**11,737**	**4,021**	**0.74**	**0.25**	**12,737**	**3,897**	**9%**	**-3%**	**9**	**2**	**17,439**	**5,588**	**16,462**	**5,730**	**0.89**	**0.31**	**13**	**10,000**	**15,800**	**16**	**9,650**	**18,600**
Arterials West of 400	**2,357**	**659**	**0.59**	**0.16**	**2,381**	**258**	**1%**	**-61%**	**0**	**19**	**3,463**	**361**	**3,439**	**780**	**0.69**	**0.16**	**4**	**4,000**	**4,000**	**5**	**4,000**	**5,000**
Arterials East of 400	**3,882**	**1,627**	**0.61**	**0.25**	**4,858**	**1,904**	**25%**	**17%**	**15**	**7**	**6,404**	**2,507**	**5,451**	**2,230**	**0.78**	**0.32**	**6**	**4,200**	**6,400**	**7**	**4,000**	**7,000**
North of Teston Rd																						
Hwy 27	1,110	347	1.11	0.35	804	203	-28%	-41%	10	9	2,226	476	2,532	620	1.27	0.31	1	1,000	1,000	2	1,000	2,000
Kipling Ave	198	156	0.20	0.16	425	40	115%	-74%	13	12	703	150	476	266	0.48	0.27	1	1,000	1,000	1	1,000	1,000
Pine Valley Dr	198	156	0.20	0.16	**588**	28	197%	-82%	20	13	779	198	389	326	0.39	0.33	1	1,000	1,000	1	1,000	1,000
Weston Rd	1,041	169	1.04	0.17	**875**	97	-16%	-43%	5	6	1,253	586	1,419	658	1.42	0.66	1	1,000	1,000	1	1,000	1,000
Hwy 400	5,498	1,735	1.02	0.32	5,498	1,735	0%	0%	-	-	7,572	2,720	7,572	2,720	1.15	0.41	3	1,800	5,400	4	1,650	6,600
Jane St	892	266	0.89	0.27	898	79	1%	-70%	0	14	1,027	776	1,021	963	1.02	0.96	1	1,000	1,000	1	1,000	1,000
Keele St	1,610	362	0.81	0.18	2,123	361	32%	0%	12	0	2,145	540	1,632	541	0.91	0.30	2	1,000	2,000	2	900	1,800
Dufferin St	866	455	0.87	0.46	820	574	-5%	26%	2	5	2,028	1,027	2,074	908	1.04	0.45	1	1,000	1,000	2	1,000	2,000
Bathurst St	2,272	1,193	0.95	0.50	2,306	967	2%	-19%	1	7	2,917	961	2,883	1,193	1.20	0.50	2	1,200	2,400	2	1,200	2,400
TOTAL	**13,685**	**4,839**	**0.87**	**0.31**	**14,337**	**4,165**	**5%**	**-14%**	**6**	**10**	**20,650**	**7,434**	**19,998**	**8,195**	**1.06**	**0.44**	**13**	**10,000**	**15,800**	**16**	**9,750**	**18,800**
Arterials West of 400	**2,547**	**828**	**0.64**	**0.21**	**2,692**	**368**	**6%**	**-56%**	**3**	**19**	**4,961**	**1,410**	**4,816**	**1,870**	**0.96**	**0.37**	**4**	**4,000**	**4,000**	**5**	**4,000**	**5,000**
Arterials East of 400	**5,640**	**2,276**	**0.88**	**0.36**	**6,147**	**1,981**	**9%**	**-13%**	**7**	**6**	**8,117**	**3,304**	**7,610**	**3,605**	**1.06**	**0.50**	**6**	**4,200**	**6,400**	**7**	**4,100**	**7,200**
North of Major Mackenzie Dr																						
Hwy 27	1,206	457	0.60	0.23	1,263	382	5%	-16%	2	4	2,533	333	2,476	457	1.24	0.23	2	1,000	2,000	2	1,000	2,000
Islington Ave	558	300	0.80	0.43	619	203	11%	-32%	3	6	969	461	908	558	1.30	0.80	1	700	700	1	700	700
Pine Valley Dr	299	203	0.30	0.20	653	131	118%	-35%	16	6	1,385	432	1,031	504	1.03	0.50	1	1,000	1,000	1	1,000	1,000
Weston Rd	1,067	240	1.07	0.24	895	186	-16%	-23%	5	4	999	313	1,171	367	1.30	0.41	1	1,000	1,000	1	900	900
Hwy 400	6,439	1,570	1.19	0.29	6,439	1,570	0%	0%	-	-	7,236	3,375	7,236	3,375	1.34	0.63	3	1,800	5,400	3	1,800	5,400
Jane St	1,594	410	0.89	0.23	2,259	348	42%	-15%	15	3	2,490	506	1,825	568	1.01	0.32	2	900	1,800	2	900	1,800
Keele St	1,201	379	0.75	0.24	1,441	385	20%	2%	7	0	1,932	686	1,692	680	1.06	0.43	2	800	1,600	2	800	1,600
Dufferin St	1,582	532	1.76	0.59	986	473	-38%	-11%	17	3	1,897	684	2,493	743	1.39	0.41	1	900	900	2	900	1,800
Bathurst St	2,716	913	1.51	0.51	2,054	844	-24%	-8%	14	2	2,700	988	3,362	1,057	1.25	0.39	2	900	1,800	3	900	2,700
TOTAL	**16,662**	**5,004**	**1.03**	**0.31**	**16,609**	**4,522**	**0%**	**-10%**	**0**	**7**	**22,141**	**7,778**	**22,194**	**8,309**	**1.24**	**0.46**	**15**	**9,000**	**16,200**	**17**	**8,900**	**17,900**
Arterials West of 400	**3,130**	**1,200**	**0.67**	**0.26**	**3,430**	**902**	**10%**	**-25%**	**5**	**9**	**5,886**	**1,539**	**5,586**	**1,886**	**1.21**	**0.41**	**5**	**3,700**	**4,700**	**5**	**3,600**	**4,600**
Arterials East of 400	**7,093**	**2,234**	**1.16**	**0.37**	**6,740**	**2,050**	**-5%**	**-8%**	**4**	**4**	**9,019**	**2,864**	**9,372**	**3,048**	**1.19**	**0.39**	**7**	**3,500**	**6,100**	**9**	**3,500**	**7,900**

Appendix D3

Existing AM Synchro Reports

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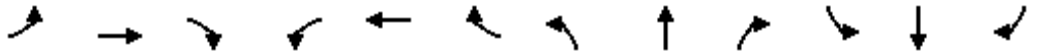


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	34	142	7	6	11	6	196	11	28	904	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	1	37	154	8	7	12	7	213	12	30	983	7
Adj No. of Lanes	0	1	1	0	1	1	0	1	1	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	69	252	217	182	127	217	78	1301	1136	85	1308	1136
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.72	0.72	0.72	0.72	0.72	0.72
Sat Flow, veh/h	15	1843	1583	595	930	1583	15	1813	1583	24	1824	1583
Grp Volume(v), veh/h	38	0	154	15	0	12	220	0	12	1013	0	7
Grp Sat Flow(s),veh/h/ln	1858	0	1583	1524	0	1583	1828	0	1583	1848	0	1583
Q Serve(g_s), s	0.0	0.0	5.1	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1
Cycle Q Clear(g_c), s	1.0	0.0	5.1	0.4	0.0	0.4	2.1	0.0	0.1	18.5	0.0	0.1
Prop In Lane	0.03		1.00	0.53		1.00	0.03		1.00	0.03		1.00
Lane Grp Cap(c), veh/h	322	0	217	309	0	217	1379	0	1136	1393	0	1136
V/C Ratio(X)	0.12	0.00	0.71	0.05	0.00	0.06	0.16	0.00	0.01	0.73	0.00	0.01
Avail Cap(c_a), veh/h	607	0	462	531	0	462	2540	0	2194	2615	0	2194
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.9	0.0	22.6	20.6	0.0	20.6	2.5	0.0	2.2	4.8	0.0	2.2
Incr Delay (d2), s/veh	0.2	0.0	4.3	0.1	0.0	0.1	0.1	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.5	0.2	0.0	0.2	1.1	0.0	0.1	9.6	0.0	0.0
LnGrp Delay(d),s/veh	21.0	0.0	26.9	20.7	0.0	20.7	2.5	0.0	2.2	5.5	0.0	2.2
LnGrp LOS	C		C	C		C	A		A	A		A
Approach Vol, veh/h		192			27			232			1020	
Approach Delay, s/veh		25.7			20.7			2.5			5.5	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		43.3		11.5		43.3		11.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		76.0		16.0		76.0		16.0
Max Q Clear Time (g_c+I1), s		4.1		7.1		20.5		2.4
Green Ext Time (p_c), s		20.0		0.7		18.9		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	81	15	116	118	19	8	88	25	93	833	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	12	88	16	126	128	21	9	96	27	101	905	39
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	337	57	208	183	28	85	855	232	138	1086	46
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.69	0.69	0.69	0.69	0.69	0.69
Sat Flow, veh/h	84	1463	248	677	796	122	68	1239	336	143	1574	67
Grp Volume(v), veh/h	116	0	0	275	0	0	132	0	0	1045	0	0
Grp Sat Flow(s),veh/h/ln	1795	0	0	1596	0	0	1643	0	0	1783	0	0
Q Serve(g_s), s	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	0.0	32.1	0.0	0.0
Cycle Q Clear(g_c), s	5.2	0.0	0.0	15.7	0.0	0.0	2.5	0.0	0.0	43.4	0.0	0.0
Prop In Lane	0.10		0.14	0.46		0.08	0.07		0.20	0.10		0.04
Lane Grp Cap(c), veh/h	453	0	0	419	0	0	1172	0	0	1270	0	0
V/C Ratio(X)	0.26	0.00	0.00	0.66	0.00	0.00	0.11	0.00	0.00	0.82	0.00	0.00
Avail Cap(c_a), veh/h	453	0	0	419	0	0	1172	0	0	1270	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.7	0.0	0.0	35.4	0.0	0.0	5.2	0.0	0.0	11.4	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	7.8	0.0	0.0	0.2	0.0	0.0	6.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	7.9	0.0	0.0	1.3	0.0	0.0	23.1	0.0	0.0
LnGrp Delay(d),s/veh	33.0	0.0	0.0	43.2	0.0	0.0	5.4	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	C			D			A			B		
Approach Vol, veh/h		116			275			132			1045	
Approach Delay, s/veh		33.0			43.2			5.4			17.5	
Approach LOS		C			D			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		73.0		27.0		73.0		27.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		69.0		23.0		69.0		23.0
Max Q Clear Time (g_c+I1), s		4.5		7.2		45.4		17.7
Green Ext Time (p_c), s		19.4		2.5		12.7		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.1
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	86	31	86	179	26	14	274	23	21	920	29
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	23	93	34	93	195	28	15	298	25	23	1000	32
Adj No. of Lanes	0	1	1	0	1	1	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	622	633	275	514	633	116	1242	102	106	1351	43
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	191	1554	1583	390	1285	1583	45	3104	255	31	3378	107
Grp Volume(v), veh/h	116	0	34	288	0	28	176	0	162	553	0	502
Grp Sat Flow(s),veh/h/ln	1745	0	1583	1675	0	1583	1754	0	1650	1839	0	1676
Q Serve(g_s), s	0.0	0.0	0.5	0.5	0.0	0.4	0.0	0.0	2.6	0.7	0.0	10.3
Cycle Q Clear(g_c), s	1.6	0.0	0.5	4.5	0.0	0.4	2.5	0.0	2.6	10.2	0.0	10.3
Prop In Lane	0.20		1.00	0.32		1.00	0.09		0.15	0.04		0.06
Lane Grp Cap(c), veh/h	806	0	633	789	0	633	799	0	660	829	0	670
V/C Ratio(X)	0.14	0.00	0.05	0.36	0.00	0.04	0.22	0.00	0.25	0.67	0.00	0.75
Avail Cap(c_a), veh/h	806	0	633	789	0	633	799	0	660	829	0	670
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.7	0.0	7.4	8.5	0.0	7.3	8.0	0.0	8.0	10.2	0.0	10.3
Incr Delay (d2), s/veh	0.4	0.0	0.2	1.3	0.0	0.1	0.6	0.0	0.9	4.2	0.0	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.3	2.5	0.0	0.2	1.4	0.0	1.3	6.0	0.0	6.0
LnGrp Delay(d),s/veh	8.1	0.0	7.5	9.8	0.0	7.5	8.6	0.0	8.9	14.5	0.0	17.8
LnGrp LOS	A		A	A		A	A		A	B		B
Approach Vol, veh/h		150			316			338			1055	
Approach Delay, s/veh		7.9			9.6			8.7			16.0	
Approach LOS		A			A			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		20.0		20.0		20.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		4.6		3.6		12.3		6.5
Green Ext Time (p_c), s		7.2		2.5		2.8		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	97	14	62	232	8	11	254	60	4	809	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	10	105	15	67	252	9	12	276	65	4	879	80
Adj No. of Lanes	0	1	1	0	1	1	0	1	1	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	282	443	44	94	443	59	1125	1013	37	1190	1013
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	0	1006	1583	0	337	1583	33	1757	1583	2	1860	1583
Grp Volume(v), veh/h	115	0	15	319	0	9	288	0	65	883	0	80
Grp Sat Flow(s),veh/h/ln	1006	0	1583	337	0	1583	1790	0	1583	1861	0	1583
Q Serve(g_s), s	0.0	0.0	0.7	0.0	0.0	0.4	0.0	0.0	1.5	0.0	0.0	1.9
Cycle Q Clear(g_c), s	28.0	0.0	0.7	28.0	0.0	0.4	6.6	0.0	1.5	32.4	0.0	1.9
Prop In Lane	0.09		1.00	0.21		1.00	0.04		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	321	0	443	138	0	443	1183	0	1013	1227	0	1013
V/C Ratio(X)	0.36	0.00	0.03	2.31	0.00	0.02	0.24	0.00	0.06	0.72	0.00	0.08
Avail Cap(c_a), veh/h	321	0	443	138	0	443	1183	0	1013	1227	0	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.5	0.0	26.2	32.6	0.0	26.1	7.7	0.0	6.8	12.3	0.0	6.8
Incr Delay (d2), s/veh	3.1	0.0	0.1	612.9	0.0	0.1	0.5	0.0	0.1	3.7	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.3	27.3	0.0	0.2	3.5	0.0	0.7	17.7	0.0	0.9
LnGrp Delay(d),s/veh	31.6	0.0	26.3	645.5	0.0	26.2	8.2	0.0	6.9	16.0	0.0	7.0
LnGrp LOS	C		C	F		C	A		A	B		A
Approach Vol, veh/h		130			328			353			963	
Approach Delay, s/veh		31.0			628.5			7.9			15.2	
Approach LOS		C			F			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		68.0		32.0		68.0		32.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		64.0		28.0		64.0		28.0
Max Q Clear Time (g_c+I1), s		8.6		30.0		34.4		30.0
Green Ext Time (p_c), s		16.2		0.0		13.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	128.3
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	0	119	0	0	0	176	694	0	0	877	103
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	52	0	129	0	0	0	191	754	0	0	953	112
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	0	269	72	317	0	419	2654	1188	72	2654	1188
Arrive On Green	0.17	0.00	0.17	0.00	0.00	0.00	0.75	0.75	0.00	0.00	0.75	0.75
Sat Flow, veh/h	1774	0	1583	1256	1863	0	528	3539	1583	707	3539	1583
Grp Volume(v), veh/h	52	0	129	0	0	0	191	754	0	0	953	112
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1256	1863	0	528	1770	1583	707	1770	1583
Q Serve(g_s), s	2.5	0.0	7.4	0.0	0.0	0.0	19.4	6.8	0.0	0.0	9.2	1.9
Cycle Q Clear(g_c), s	2.5	0.0	7.4	0.0	0.0	0.0	28.6	6.8	0.0	0.0	9.2	1.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	374	0	269	72	317	0	419	2654	1188	72	2654	1188
V/C Ratio(X)	0.14	0.00	0.48	0.00	0.00	0.00	0.46	0.28	0.00	0.00	0.36	0.09
Avail Cap(c_a), veh/h	374	0	269	72	317	0	419	2654	1188	72	2654	1188
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	35.5	0.0	37.5	0.0	0.0	0.0	9.2	4.0	0.0	0.0	4.3	3.4
Incr Delay (d2), s/veh	0.8	0.0	6.0	0.0	0.0	0.0	3.5	0.3	0.0	0.0	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	3.7	0.0	0.0	0.0	3.2	3.3	0.0	0.0	4.5	0.9
LnGrp Delay(d),s/veh	36.3	0.0	43.5	0.0	0.0	0.0	12.7	4.2	0.0	0.0	4.7	3.5
LnGrp LOS	D		D				B	A			A	A
Approach Vol, veh/h		181			0			945			1065	
Approach Delay, s/veh		41.4			0.0			6.0			4.5	
Approach LOS		D						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		79.0		21.0		79.0		21.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		75.0		17.0		75.0		17.0
Max Q Clear Time (g_c+I1), s		30.6		9.4		11.2		0.0
Green Ext Time (p_c), s		28.2		0.6		34.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A

HCM 2010 analysis supports speed limit in the range of 25 and 55 mph

HCM 2010 analysis supports speed limit in the range of 25 and 55 mph

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	615	157	300	381	276	930
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	668	171	326	414	300	1011
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	744	664	1732	775	395	1732
Arrive On Green	0.42	0.42	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1774	1583	3632	1583	716	3632
Grp Volume(v), veh/h	668	171	326	414	300	1011
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1583	716	1770
Q Serve(g_s), s	30.8	6.2	4.6	15.9	35.6	17.9
Cycle Q Clear(g_c), s	30.8	6.2	4.6	15.9	40.2	17.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	744	664	1732	775	395	1732
V/C Ratio(X)	0.90	0.26	0.19	0.53	0.76	0.58
Avail Cap(c_a), veh/h	989	883	1732	775	395	1732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.7	16.6	12.6	15.5	23.9	16.0
Incr Delay (d2), s/veh	8.7	0.2	0.2	2.6	12.8	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.8	2.7	2.3	7.5	8.4	9.1
LnGrp Delay(d),s/veh	32.5	16.8	12.9	18.1	36.7	17.5
LnGrp LOS	C	B	B	B	D	B
Approach Vol, veh/h	839		740			1311
Approach Delay, s/veh	29.3		15.8			21.9
Approach LOS	C		B			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		47.0				47.0		40.9
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		43.0				43.0		49.0
Max Q Clear Time (g_c+I1), s		17.9				42.2		32.8
Green Ext Time (p_c), s		17.8				0.8		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	0	250	1	0	0	136	322	1	0	1169	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	23	0	272	1	0	0	148	350	1	0	1271	20
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	0	269	194	0	0	189	1485	4	60	1360	1156
Arrive On Green	0.13	0.00	0.13	0.13	0.00	0.00	0.04	0.80	0.80	0.00	0.73	0.73
Sat Flow, veh/h	1445	0	1583	1009	0	0	1774	1857	5	1026	1863	1583
Grp Volume(v), veh/h	23	0	272	1	0	0	148	0	351	0	1271	20
Grp Sat Flow(s),veh/h/ln	1445	0	1583	1009	0	0	1774	0	1862	1026	1863	1583
Q Serve(g_s), s	0.0	0.0	16.0	0.1	0.0	0.0	2.4	0.0	5.6	0.0	69.6	0.4
Cycle Q Clear(g_c), s	1.4	0.0	16.0	1.5	0.0	0.0	2.4	0.0	5.6	0.0	69.6	0.4
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	0	269	194	0	0	189	0	1489	60	1360	1156
V/C Ratio(X)	0.09	0.00	1.01	0.01	0.00	0.00	0.78	0.00	0.24	0.00	0.93	0.02
Avail Cap(c_a), veh/h	253	0	269	194	0	0	212	0	1489	60	1360	1156
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	0.0	49.8	46.3	0.0	0.0	32.6	0.0	3.0	0.0	13.8	4.4
Incr Delay (d2), s/veh	0.2	0.0	57.3	0.0	0.0	0.0	15.6	0.0	0.4	0.0	13.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	13.2	0.0	0.0	0.0	4.5	0.0	3.0	0.0	40.3	0.2
LnGrp Delay(d),s/veh	45.8	0.0	107.2	46.3	0.0	0.0	48.2	0.0	3.3	0.0	26.9	4.5
LnGrp LOS	D		F	D			D		A		C	A
Approach Vol, veh/h		295			1			499			1291	
Approach Delay, s/veh		102.4			46.3			16.6			26.6	
Approach LOS		F			D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		100.0		20.0	8.4	91.6		20.0
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		96.0		16.0	6.0	86.0		16.0
Max Q Clear Time (g_c+I1), s		7.6		18.0	4.4	71.6		3.5
Green Ext Time (p_c), s		38.4		0.0	0.1	11.7		1.2

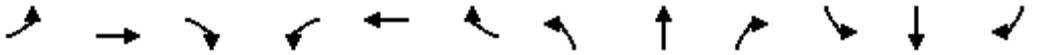
Intersection Summary	
HCM 2010 Ctrl Delay	34.9
HCM 2010 LOS	C

HCM 2010 analysis supports speed limit in the range of 25 and 55 mph

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	144	928	127	279	494	68	75	321	257	334	997	227
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	157	1009	138	303	537	74	82	349	279	363	1084	247
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	480	2053	918	273	2053	918	92	1203	538	285	1203	538
Arrive On Green	0.58	0.58	0.58	0.58	0.58	0.58	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	807	3539	1583	488	3539	1583	410	3539	1583	795	3539	1583
Grp Volume(v), veh/h	157	1009	138	303	537	74	82	349	279	363	1084	247
Grp Sat Flow(s),veh/h/ln	807	1770	1583	488	1770	1583	410	1770	1583	795	1770	1583
Q Serve(g_s), s	12.0	16.7	4.0	41.3	7.5	2.1	4.9	7.2	14.1	26.8	29.1	12.2
Cycle Q Clear(g_c), s	19.5	16.7	4.0	58.0	7.5	2.1	34.0	7.2	14.1	34.0	29.1	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	480	2053	918	273	2053	918	92	1203	538	285	1203	538
V/C Ratio(X)	0.33	0.49	0.15	1.11	0.26	0.08	0.89	0.29	0.52	1.27	0.90	0.46
Avail Cap(c_a), veh/h	480	2053	918	273	2053	918	92	1203	538	285	1203	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	12.3	9.7	34.8	10.4	9.3	49.4	24.2	26.4	40.0	31.4	25.8
Incr Delay (d2), s/veh	0.4	0.2	0.1	86.6	0.1	0.0	60.1	0.1	0.9	148.1	9.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	8.2	1.7	14.1	3.7	0.9	3.8	3.6	6.3	19.5	15.7	5.4
LnGrp Delay(d),s/veh	15.6	12.5	9.7	121.4	10.5	9.3	109.5	24.3	27.3	188.1	40.9	26.4
LnGrp LOS	B	B	A	F	B	A	F	C	C	F	D	C
Approach Vol, veh/h		1304			914			710			1694	
Approach Delay, s/veh		12.6			47.2			35.3			70.3	
Approach LOS		B			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.0		62.0		38.0		62.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		34.0		58.0		34.0		58.0
Max Q Clear Time (g_c+I1), s		36.0		21.5		36.0		60.0
Green Ext Time (p_c), s		0.0		27.3		0.0		0.0

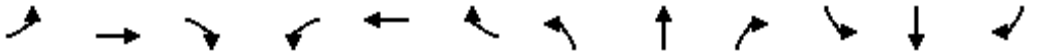
Intersection Summary	
HCM 2010 Ctrl Delay	44.1
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	146	1277	257	220	1475	23	128	241	113	135	944	515
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	159	1388	279	239	1603	25	139	262	123	147	1026	560
Adj No. of Lanes	2	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	1475	660	235	1622	726	146	1091	488	400	1121	501
Arrive On Green	0.05	0.42	0.42	0.09	0.46	0.46	0.04	0.31	0.31	0.05	0.32	0.32
Sat Flow, veh/h	3442	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	159	1388	279	239	1603	25	139	262	123	147	1026	560
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.5	45.2	15.0	11.0	53.8	1.0	5.0	6.6	7.0	6.0	33.5	38.0
Cycle Q Clear(g_c), s	5.5	45.2	15.0	11.0	53.8	1.0	5.0	6.6	7.0	6.0	33.5	38.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	172	1475	660	235	1622	726	146	1091	488	400	1121	501
V/C Ratio(X)	0.92	0.94	0.42	1.02	0.99	0.03	0.95	0.24	0.25	0.37	0.92	1.12
Avail Cap(c_a), veh/h	172	1475	660	235	1622	726	146	1091	488	400	1121	501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	33.6	24.8	35.2	32.2	17.9	38.8	31.0	31.1	27.9	39.5	41.0
Incr Delay (d2), s/veh	47.1	12.2	0.4	63.7	19.5	0.0	59.9	0.5	1.2	0.6	13.0	76.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	24.5	6.6	11.9	30.4	0.5	4.6	3.3	3.2	3.4	18.4	27.2
LnGrp Delay(d),s/veh	103.9	45.7	25.2	99.1	51.7	17.9	98.7	31.5	32.4	28.4	52.4	117.3
LnGrp LOS	F	D	C	F	D	B	F	C	C	C	D	F
Approach Vol, veh/h		1826			1867			524			1733	
Approach Delay, s/veh		47.7			57.3			49.5			71.3	
Approach LOS		D			E			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	41.0	15.0	54.0	9.0	42.0	10.0	59.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	37.0	11.0	50.0	5.0	38.0	6.0	55.0
Max Q Clear Time (g_c+I1), s	8.0	9.0	13.0	47.2	7.0	40.0	7.5	55.8
Green Ext Time (p_c), s	0.0	17.4	0.0	2.8	0.0	0.0	0.0	0.0

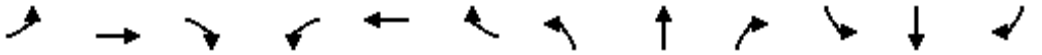
Intersection Summary	
HCM 2010 Ctrl Delay	57.8
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	1195	141	124	1401	38	106	281	114	190	919	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	65	1299	153	135	1523	0	115	305	124	207	999	100
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	141	1367	160	173	1573	704	153	637	254	400	1043	104
Arrive On Green	0.03	0.43	0.43	0.05	0.44	0.00	0.04	0.26	0.26	0.10	0.32	0.32
Sat Flow, veh/h	1774	3192	374	1774	3539	1583	1774	2474	985	1774	3250	325
Grp Volume(v), veh/h	65	717	735	135	1523	0	115	216	213	207	544	555
Grp Sat Flow(s),veh/h/ln	1774	1770	1797	1774	1770	1583	1774	1770	1689	1774	1770	1805
Q Serve(g_s), s	2.0	38.9	39.4	4.3	41.8	0.0	4.0	10.3	10.7	8.1	30.0	30.0
Cycle Q Clear(g_c), s	2.0	38.9	39.4	4.3	41.8	0.0	4.0	10.3	10.7	8.1	30.0	30.0
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.58	1.00		0.18
Lane Grp Cap(c), veh/h	141	758	769	173	1573	704	153	456	435	400	568	580
V/C Ratio(X)	0.46	0.95	0.96	0.78	0.97	0.00	0.75	0.47	0.49	0.52	0.96	0.96
Avail Cap(c_a), veh/h	152	763	775	173	1573	704	153	456	435	447	568	580
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	27.4	27.6	23.7	27.0	0.0	32.6	31.3	31.4	22.6	33.2	33.2
Incr Delay (d2), s/veh	2.3	20.6	21.9	20.1	15.7	0.0	18.3	3.5	3.9	1.0	28.6	28.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	23.3	24.1	3.0	23.7	0.0	2.0	5.5	5.4	4.1	19.2	19.5
LnGrp Delay(d),s/veh	26.3	48.0	49.5	43.7	42.7	0.0	51.0	34.8	35.3	23.7	61.7	61.5
LnGrp LOS	C	D	D	D	D		D	C	D	C	E	E
Approach Vol, veh/h		1517			1658			544			1306	
Approach Delay, s/veh		47.8			42.8			38.4			55.6	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	29.7	9.0	46.7	8.0	36.0	7.4	48.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	23.0	5.0	43.0	4.0	32.0	4.0	44.0
Max Q Clear Time (g_c+I1), s	10.1	12.7	6.3	41.4	6.0	32.0	4.0	43.8
Green Ext Time (p_c), s	0.2	7.3	0.0	1.2	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	47.2
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	53	793	52	230	2	225	301	140	725	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	0	58	862	57	250	2	245	327	152	788	1
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	141	0	111	777	146	638	92	650	552	385	832	1
Arrive On Green	0.00	0.00	0.07	0.38	0.48	0.48	0.35	0.35	0.35	0.06	0.45	0.45
Sat Flow, veh/h	1774	0	1583	1774	302	1326	684	1863	1583	1774	1860	2
Grp Volume(v), veh/h	0	0	58	862	0	307	2	245	327	152	0	789
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1629	684	1863	1583	1774	0	1862
Q Serve(g_s), s	0.0	0.0	4.0	42.0	0.0	13.5	0.3	11.0	18.9	6.0	0.0	45.4
Cycle Q Clear(g_c), s	0.0	0.0	4.0	42.0	0.0	13.5	34.7	11.0	18.9	6.0	0.0	45.4
Prop In Lane	1.00		1.00	1.00		0.81	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	141	0	111	777	0	784	92	650	552	385	0	833
V/C Ratio(X)	0.00	0.00	0.52	1.11	0.00	0.39	0.02	0.38	0.59	0.39	0.00	0.95
Avail Cap(c_a), veh/h	202	0	227	777	0	787	92	650	552	385	0	833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	50.2	29.4	0.0	18.5	51.6	27.3	29.9	20.8	0.0	29.6
Incr Delay (d2), s/veh	0.0	0.0	3.8	66.6	0.0	0.3	0.4	1.7	4.6	0.7	0.0	20.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.8	17.6	0.0	6.1	0.1	5.9	9.0	2.9	0.0	28.0
LnGrp Delay(d),s/veh	0.0	0.0	54.0	96.0	0.0	18.9	52.0	29.0	34.5	21.5	0.0	50.4
LnGrp LOS			D	F		B	D	C	C	C		D
Approach Vol, veh/h		58			1169			574			941	
Approach Delay, s/veh		54.0			75.7			32.2			45.7	
Approach LOS		D			E			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	11.0	43.0	46.0	11.8		54.0	0.0	57.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	39.0	42.0	16.0		50.0	4.0	54.0
Max Q Clear Time (g_c+I1), s	8.0	36.7	44.0	6.0		47.4	0.0	15.5
Green Ext Time (p_c), s	0.0	1.7	0.0	1.8		2.0	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	55.9
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	171	77	371	43	31	5	147	186	55	28	943	639
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	186	84	403	47	34	5	160	202	60	30	1025	695
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	431	519	441	294	442	65	212	1735	502	753	2266	1014
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	1363	1863	1583	905	1588	234	282	2710	784	1113	3539	1583
Grp Volume(v), veh/h	186	84	403	47	0	39	160	130	132	30	1025	695
Grp Sat Flow(s),veh/h/ln	1363	1863	1583	905	0	1822	282	1770	1724	1113	1770	1583
Q Serve(g_s), s	11.5	3.4	24.2	4.1	0.0	1.6	48.6	2.8	2.9	1.1	14.4	27.7
Cycle Q Clear(g_c), s	13.0	3.4	24.2	7.4	0.0	1.6	63.0	2.8	2.9	4.0	14.4	27.7
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	431	519	441	294	0	507	212	1133	1104	753	2266	1014
V/C Ratio(X)	0.43	0.16	0.91	0.16	0.00	0.08	0.75	0.11	0.12	0.04	0.45	0.69
Avail Cap(c_a), veh/h	453	549	467	309	0	537	212	1133	1104	753	2266	1014
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	26.8	34.4	29.6	0.0	26.2	28.1	6.9	6.9	7.7	9.0	11.3
Incr Delay (d2), s/veh	0.7	0.1	21.9	0.3	0.0	0.1	21.7	0.2	0.2	0.1	0.7	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	1.7	13.2	1.0	0.0	0.8	5.6	1.4	1.5	0.3	7.2	13.0
LnGrp Delay(d),s/veh	31.7	27.0	56.2	29.9	0.0	26.2	49.8	7.1	7.1	7.8	9.6	15.1
LnGrp LOS	C	C	E	C		C	D	A	A	A	A	B
Approach Vol, veh/h		673			86			422			1750	
Approach Delay, s/veh		45.8			28.2			23.3			11.8	
Approach LOS		D			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		67.0		31.4		67.0		31.4
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		63.0		29.0		63.0		29.0
Max Q Clear Time (g_c+I1), s		65.0		26.2		29.7		9.4
Green Ext Time (p_c), s		0.0		1.2		24.9		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	21.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	316	65	212	205	34	17	128	95	215	790	36
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1810	1776	1845	1696	1792	1652	1810	1863	1845	1900
Adj Flow Rate, veh/h	7	336	69	226	218	36	18	136	101	229	840	38
Adj No. of Lanes	1	1	1	1	2	1	1	2	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	5	7	3	12	6	15	5	2	3	3
Cap, veh/h	538	831	686	372	1563	643	208	1312	642	515	1427	65
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1143	1863	1538	931	3505	1442	605	3139	1536	1137	3415	154
Grp Volume(v), veh/h	7	336	69	226	218	36	18	136	101	229	431	447
Grp Sat Flow(s),veh/h/ln	1143	1863	1538	931	1752	1442	605	1570	1536	1137	1752	1817
Q Serve(g_s), s	0.4	12.5	2.7	22.3	3.8	1.5	2.4	2.7	4.2	15.8	19.5	19.5
Cycle Q Clear(g_c), s	4.2	12.5	2.7	34.9	3.8	1.5	22.0	2.7	4.2	18.5	19.5	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	538	831	686	372	1563	643	208	1312	642	515	732	759
V/C Ratio(X)	0.01	0.40	0.10	0.61	0.14	0.06	0.09	0.10	0.16	0.44	0.59	0.59
Avail Cap(c_a), veh/h	617	960	792	436	1806	743	208	1312	642	515	732	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	19.3	16.5	31.0	16.8	16.2	31.6	18.2	18.7	23.8	23.1	23.1
Incr Delay (d2), s/veh	0.0	0.3	0.1	1.8	0.0	0.0	0.8	0.2	0.5	2.8	3.5	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	6.5	1.1	5.9	1.8	0.6	0.5	1.2	1.9	5.4	10.2	10.5
LnGrp Delay(d),s/veh	18.1	19.6	16.6	32.9	16.9	16.2	32.4	18.4	19.2	26.6	26.6	26.4
LnGrp LOS	B	B	B	C	B	B	C	B	B	C	C	C
Approach Vol, veh/h		412			480			255			1107	
Approach Delay, s/veh		19.1			24.4			19.7			26.5	
Approach LOS		B			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		50.0		52.9		50.0		52.9
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0
Max Green Setting (Gmax), s		43.0		53.0		43.0		53.0
Max Q Clear Time (g_c+I1), s		21.5		14.5		24.0		36.9
Green Ext Time (p_c), s		16.2		14.7		14.7		9.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	1294	0	33	849	13	1	163	0	21	199	71
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1792	1900	1845	1776	1450	1900	1760	1900	1900	1877	1900
Adj Flow Rate, veh/h	21	1320	0	34	866	13	1	166	0	21	203	72
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	5	6	6	3	7	31	8	8	8	0	0	0
Cap, veh/h	72	771	0	72	764	530	37	773	0	67	560	189
Arrive On Green	0.43	0.43	0.00	0.43	0.43	0.43	0.44	0.44	0.00	0.44	0.44	0.44
Sat Flow, veh/h	611	1792	0	410	1776	1233	1	1758	0	64	1273	430
Grp Volume(v), veh/h	21	1320	0	34	866	13	167	0	0	296	0	0
Grp Sat Flow(s),veh/h/ln	611	1792	0	410	1776	1233	1759	0	0	1767	0	0
Q Serve(g_s), s	0.0	43.0	0.0	0.0	43.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	43.0	43.0	0.0	43.0	43.0	0.6	5.9	0.0	0.0	11.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	0.01		0.00	0.07		0.24
Lane Grp Cap(c), veh/h	72	771	0	72	764	530	810	0	0	816	0	0
V/C Ratio(X)	0.29	1.71	0.00	0.47	1.13	0.02	0.21	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	72	771	0	72	764	530	810	0	0	816	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.0	28.5	0.0	50.0	28.5	16.4	17.3	0.0	0.0	18.8	0.0	0.0
Incr Delay (d2), s/veh	2.2	326.2	0.0	20.6	76.2	0.1	0.6	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	91.0	0.0	1.3	37.2	0.2	3.0	0.0	0.0	5.7	0.0	0.0
LnGrp Delay(d),s/veh	52.2	354.7	0.0	70.6	104.7	16.5	17.9	0.0	0.0	20.0	0.0	0.0
LnGrp LOS	D	F		E	F	B	B			C		
Approach Vol, veh/h		1341			913			167			296	
Approach Delay, s/veh		350.0			102.1			17.9			20.0	
Approach LOS		F			F			B			C	

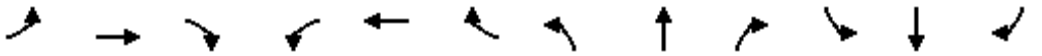
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		50.0		50.0		50.0		50.0
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0
Max Green Setting (Gmax), s		43.0		44.0		43.0		44.0
Max Q Clear Time (g_c+I1), s		45.0		13.0		45.0		7.9
Green Ext Time (p_c), s		0.0		3.7		0.0		3.8

Intersection Summary	
HCM 2010 Ctrl Delay	210.3
HCM 2010 LOS	F

Appendix D4

Highway 400 Intersection Synchro Reports

hdrinc.com 100 York Boulevard, Suite 300, Richmond Hill, ON, CA L4B 1J8
(289) 695-4600

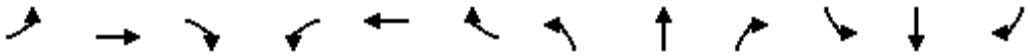


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	2447	27	15	954	0	13	0	21	103	8	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0		7.0		7.0	7.0	7.0	7.0
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00		1.00	0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00		1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	0.96	1.00
Satd. Flow (prot)		3579	1533	1706	3510		1587		1484	1667	1610	1498
Flt Permitted		1.00	1.00	0.05	1.00		0.95		1.00	0.95	0.96	1.00
Satd. Flow (perm)		3579	1533	84	3510		1587		1484	1667	1610	1498
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2576	28	16	1004	0	14	0	22	108	8	61
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	21	0	0	57
Lane Group Flow (vph)	0	2576	26	16	1004	0	14	0	1	58	58	4
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	2%	4%	7%	4%	0%	15%	0%	10%	4%	38%	9%
Turn Type			Perm	Perm			Prot		custom	Split		Perm
Protected Phases		4			8		2		2	6	6	
Permitted Phases			4	8								6
Actuated Green, G (s)		85.6	85.6	85.6	85.6		4.9		4.9	8.5	8.5	8.5
Effective Green, g (s)		85.6	85.6	85.6	85.6		4.9		4.9	8.5	8.5	8.5
Actuated g/C Ratio		0.71	0.71	0.71	0.71		0.04		0.04	0.07	0.07	0.07
Clearance Time (s)		7.0	7.0	7.0	7.0		7.0		7.0	7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2553	1094	60	2504		65		61	118	114	106
v/s Ratio Prot		c0.72			0.29		c0.01		0.00	0.03	c0.04	
v/s Ratio Perm			0.02	0.19								0.00
v/c Ratio		1.01	0.02	0.27	0.40		0.22		0.01	0.49	0.51	0.04
Uniform Delay, d1		17.2	5.0	6.1	6.9		55.7		55.2	53.7	53.7	52.0
Progression Factor		1.00	1.00	1.34	1.38		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		20.0	0.0	5.4	0.2		1.7		0.1	3.2	3.5	0.2
Delay (s)		37.2	5.1	13.6	9.8		57.4		55.3	56.9	57.3	52.1
Level of Service		D	A	B	A		E		E	E	E	D
Approach Delay (s)		36.9			9.9			56.1			55.4	
Approach LOS		D			A			E			E	

Intersection Summary			
HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1181	0	0	2080	336	606
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0			7.0	7.0	7.0
Lane Util. Factor	0.95			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3510			3579	3309	2711
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3510			3579	3309	2711
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1298	0	0	2286	369	666
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1298	0	0	2286	369	666
Confl. Peds. (#/hr)		4	4			
Heavy Vehicles (%)	4%	0%	0%	2%	7%	6%
Turn Type						custom
Protected Phases	4			8	2	2
Permitted Phases						4 8
Actuated Green, G (s)	88.9			88.9	17.1	106.0
Effective Green, g (s)	88.9			88.9	17.1	106.0
Actuated g/C Ratio	0.74			0.74	0.14	0.88
Clearance Time (s)	7.0			7.0	7.0	7.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	2600			2651	472	2711
v/s Ratio Prot	0.37			c0.64	c0.11	0.04
v/s Ratio Perm						0.21
v/c Ratio	0.50			0.86	0.78	0.25
Uniform Delay, d1	6.4			11.2	49.6	1.0
Progression Factor	0.51			1.00	1.00	1.00
Incremental Delay, d2	0.3			4.0	8.2	0.0
Delay (s)	3.5			15.2	57.9	1.1
Level of Service	A			B	E	A
Approach Delay (s)	3.5			15.2	21.3	
Approach LOS	A			B	C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	212	343	1040	305	0	117	0	122	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	4.0	7.0		4.0		4.0			
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00			
Frt		1.00	0.85	1.00	1.00		1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00			
Satd. Flow (prot)		3579	1633	1772	3614		3404		1471			
Flt Permitted		1.00	1.00	0.55	1.00		0.95		1.00			
Satd. Flow (perm)		3579	1633	1019	3614		3404		1471			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	216	350	1061	311	0	119	0	124	0	0	0
RTOR Reduction (vph)	0	0	229	0	0	0	0	0	118	0	0	0
Lane Group Flow (vph)	0	216	121	1061	311	0	119	0	6	0	0	0
Heavy Vehicles (%)	0%	2%	0%	3%	1%	0%	4%	0%	11%	0%	0%	0%
Turn Type	Perm		Perm	pm+pt			Prot		custom	Split		
Protected Phases		4		3	8		5		5	6	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		31.0	31.0	75.0	75.0		4.0		4.0			
Effective Green, g (s)		31.0	31.0	75.0	75.0		4.0		4.0			
Actuated g/C Ratio		0.34	0.34	0.83	0.83		0.04		0.04			
Clearance Time (s)		7.0	7.0	4.0	7.0		4.0		4.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		1233	562	1184	3012		151		65			
v/s Ratio Prot		0.06		c0.40	0.09		c0.03		0.00			
v/s Ratio Perm			0.07	c0.35								
v/c Ratio		0.18	0.21	0.90	0.10		0.79		0.08			
Uniform Delay, d1		20.6	20.9	4.7	1.4		42.6		41.2			
Progression Factor		1.00	1.00	4.44	0.97		1.00		1.00			
Incremental Delay, d2		0.3	0.9	8.1	0.1		23.2		0.6			
Delay (s)		20.9	21.8	29.1	1.4		65.8		41.8			
Level of Service		C	C	C	A		E		D			
Approach Delay (s)		21.4			22.8			53.6			0.0	
Approach LOS		C			C			D			A	

Intersection Summary			
HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	638	0	0	1258	81	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0			7.0	7.0	7.0
Lane Util. Factor	0.95			0.95	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.91	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	3544			3510	2976	1315
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	3544			3510	2976	1315
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	686	0	0	1353	87	256
RTOR Reduction (vph)	0	0	0	0	115	115
Lane Group Flow (vph)	686	0	0	1353	100	13
Confl. Peds. (#/hr)		2	2			
Heavy Vehicles (%)	3%	0%	0%	4%	10%	13%
Turn Type						Perm
Protected Phases	4			8	2	
Permitted Phases						2
Actuated Green, G (s)	66.8			66.8	9.2	9.2
Effective Green, g (s)	66.8			66.8	9.2	9.2
Actuated g/C Ratio	0.74			0.74	0.10	0.10
Clearance Time (s)	7.0			7.0	7.0	7.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	2630			2605	304	134
v/s Ratio Prot	0.19			c0.39	c0.03	
v/s Ratio Perm						0.01
v/c Ratio	0.26			0.52	0.33	0.10
Uniform Delay, d1	3.7			4.9	37.5	36.6
Progression Factor	0.91			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.7	0.6	0.3
Delay (s)	3.6			5.6	38.2	37.0
Level of Service	A			A	D	D
Approach Delay (s)	3.6			5.6	37.7	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

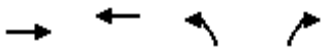
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	2576	28	16	1004	14	22	58	58	61
v/c Ratio	0.95	0.02	0.25	0.38	0.13	0.18	0.41	0.43	0.34
Control Delay	26.4	6.0	21.1	10.3	55.5	23.5	60.2	61.2	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	6.0	21.1	10.3	55.5	23.5	60.2	61.2	17.3
Queue Length 50th (m)	~351.6	1.6	1.9	68.4	3.2	0.0	13.8	14.0	0.0
Queue Length 95th (m)	#407.8	5.1	m2.3	91.6	9.9	8.2	27.3	27.3	12.6
Internal Link Dist (m)	172.2			343.5				160.3	
Turn Bay Length (m)		35.0	50.0						40.0
Base Capacity (vph)	2720	1166	64	2667	212	217	514	496	504
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.02	0.25	0.38	0.07	0.10	0.11	0.12	0.12

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1298	2286	369	666
v/c Ratio	0.50	0.86	0.79	0.25
Control Delay	3.6	15.9	62.1	0.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.6	15.9	62.1	0.2
Queue Length 50th (m)	27.0	183.2	43.4	0.0
Queue Length 95th (m)	m10.2	223.4	59.8	0.0
Internal Link Dist (m)	343.5	213.0	177.1	
Turn Bay Length (m)			130.0	130.0
Base Capacity (vph)	2602	2653	496	2669
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.50	0.86	0.74	0.25

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

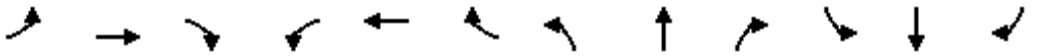
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	216	350	1061	311	119	124
v/c Ratio	0.18	0.44	0.87	0.10	0.79	0.67
Control Delay	21.1	4.4	26.4	1.4	77.3	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	4.4	26.4	1.4	77.3	27.6
Queue Length 50th (m)	13.5	0.0	118.9	3.3	10.7	0.0
Queue Length 95th (m)	21.5	17.3	#187.0	4.8	#25.0	#22.8
Internal Link Dist (m)	147.4			299.4		
Turn Bay Length (m)		85.0	250.0			
Base Capacity (vph)	1233	792	1217	3012	151	184
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.44	0.87	0.10	0.79	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	686	1353	215	128
v/c Ratio	0.26	0.52	0.51	0.51
Control Delay	3.8	5.9	20.5	14.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.8	5.9	20.5	14.7
Queue Length 50th (m)	12.8	39.4	7.4	0.0
Queue Length 95th (m)	24.3	63.6	17.0	16.7
Internal Link Dist (m)	299.4	163.7	168.2	
Turn Bay Length (m)				100.0
Base Capacity (vph)	2630	2604	1173	563
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.52	0.18	0.23

Intersection Summary

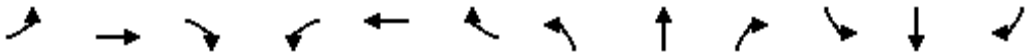


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1577	36	29	1832	0	61	0	89	99	28	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0		7.0		7.0	7.0	7.0	7.0
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00		1.00	0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.96	1.00	1.00		1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	0.97	1.00
Satd. Flow (prot)		3579	1479	1704	3579		1772		1526	1700	1704	1526
Flt Permitted		1.00	1.00	0.09	1.00		0.95		1.00	0.95	0.97	1.00
Satd. Flow (perm)		3579	1479	166	3579		1772		1526	1700	1704	1526
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	1593	36	29	1851	0	62	0	90	100	28	257
RTOR Reduction (vph)	0	0	4	0	0	0	0	0	83	0	0	172
Lane Group Flow (vph)	0	1593	32	29	1851	0	62	0	8	63	65	85
Confl. Peds. (#/hr)			11	11								
Heavy Vehicles (%)	0%	2%	6%	7%	2%	0%	3%	0%	7%	2%	7%	7%
Turn Type			Perm	Perm			Prot		custom	Split		Perm
Protected Phases		4			8		2		2	6	6	
Permitted Phases			4	8								6
Actuated Green, G (s)		76.0	76.0	76.0	76.0		10.0		10.0	13.0	13.0	13.0
Effective Green, g (s)		76.0	76.0	76.0	76.0		10.0		10.0	13.0	13.0	13.0
Actuated g/C Ratio		0.63	0.63	0.63	0.63		0.08		0.08	0.11	0.11	0.11
Clearance Time (s)		7.0	7.0	7.0	7.0		7.0		7.0	7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2267	937	105	2267		148		127	184	185	165
v/s Ratio Prot		0.45			c0.52		c0.03		0.00	0.04	0.04	
v/s Ratio Perm			0.02	0.17								c0.06
v/c Ratio		0.70	0.03	0.28	0.82		0.42		0.06	0.34	0.35	0.51
Uniform Delay, d1		14.5	8.2	9.8	16.7		52.2		50.7	49.5	49.6	50.5
Progression Factor		1.00	1.00	1.20	1.22		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		1.9	0.1	2.6	1.4		1.9		0.2	1.1	1.2	2.7
Delay (s)		16.4	8.3	14.3	21.8		54.2		50.9	50.7	50.7	53.2
Level of Service		B	A	B	C		D		D	D	D	D
Approach Delay (s)		16.2			21.7			52.2			52.4	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1029	0	0	1856	905	951
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0			7.0	7.0	7.0
Lane Util. Factor	0.95			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3579			3579	3506	2846
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3579			3579	3506	2846
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1061	0	0	1913	933	980
RTOR Reduction (vph)	0	0	0	0	0	103
Lane Group Flow (vph)	1061	0	0	1913	933	878
Confl. Peds. (#/hr)		13	13			
Heavy Vehicles (%)	2%	0%	0%	2%	1%	1%
Turn Type						Perm
Protected Phases	4			8	2	
Permitted Phases						2
Actuated Green, G (s)	68.0			68.0	38.0	38.0
Effective Green, g (s)	68.0			68.0	38.0	38.0
Actuated g/C Ratio	0.57			0.57	0.32	0.32
Clearance Time (s)	7.0			7.0	7.0	7.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	2028			2028	1110	901
v/s Ratio Prot	0.30			c0.53	0.27	
v/s Ratio Perm						c0.31
v/c Ratio	0.52			0.94	0.84	0.97
Uniform Delay, d1	16.0			24.2	38.2	40.5
Progression Factor	0.33			1.00	1.00	1.00
Incremental Delay, d2	0.7			10.5	5.9	23.6
Delay (s)	6.0			34.7	44.1	64.1
Level of Service	A			C	D	E
Approach Delay (s)	6.0			34.7	54.3	
Approach LOS	A			C	D	

Intersection Summary			
HCM Average Control Delay	36.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	326	123	407	345	0	40	0	163	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	4.0	7.0		4.0		4.0			
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00			
Frt		1.00	0.85	1.00	1.00		1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00			
Satd. Flow (prot)		3614	1617	1755	3650		2442		1484			
Flt Permitted		1.00	1.00	0.51	1.00		0.95		1.00			
Satd. Flow (perm)		3614	1617	945	3650		2442		1484			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	340	128	424	359	0	42	0	170	0	0	0
RTOR Reduction (vph)	0	0	46	0	0	0	0	0	157	0	0	0
Lane Group Flow (vph)	0	340	82	424	359	0	42	0	13	0	0	0
Heavy Vehicles (%)	0%	1%	1%	4%	0%	0%	45%	0%	10%	0%	0%	0%
Turn Type	Perm		Perm	pm+pt			Prot		custom	Split		
Protected Phases		4		3	8		5		5	6	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		57.6	57.6	72.1	72.1		6.9		6.9			
Effective Green, g (s)		57.6	57.6	72.1	72.1		6.9		6.9			
Actuated g/C Ratio		0.64	0.64	0.80	0.80		0.08		0.08			
Clearance Time (s)		7.0	7.0	4.0	7.0		4.0		4.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		2313	1035	852	2924		187		114			
v/s Ratio Prot		0.09		c0.06	0.10		c0.02		0.01			
v/s Ratio Perm			0.05	c0.34								
v/c Ratio		0.15	0.08	0.50	0.12		0.22		0.11			
Uniform Delay, d1		6.4	6.1	2.5	2.0		39.0		38.7			
Progression Factor		1.00	1.00	3.38	1.66		1.00		1.00			
Incremental Delay, d2		0.1	0.1	0.4	0.1		0.6		0.4			
Delay (s)		6.6	6.3	8.9	3.4		39.6		39.2			
Level of Service		A	A	A	A		D		D			
Approach Delay (s)		6.5			6.3			39.3			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	750	0	0	950	158	608
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0			7.0	7.0	7.0
Lane Util. Factor	0.95			0.95	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.90	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	3544			3614	3115	1415
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	3544			3614	3115	1415
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	852	0	0	1080	180	691
RTOR Reduction (vph)	0	0	0	0	67	67
Lane Group Flow (vph)	852	0	0	1080	460	279
Confl. Peds. (#/hr)		2	2			
Heavy Vehicles (%)	3%	0%	0%	1%	8%	5%
Turn Type						Perm
Protected Phases	4			8	2	
Permitted Phases						2
Actuated Green, G (s)	52.5			52.5	23.5	23.5
Effective Green, g (s)	52.5			52.5	23.5	23.5
Actuated g/C Ratio	0.58			0.58	0.26	0.26
Clearance Time (s)	7.0			7.0	7.0	7.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	2067			2108	813	369
v/s Ratio Prot	0.24			c0.30	0.15	
v/s Ratio Perm						c0.20
v/c Ratio	0.41			0.51	0.57	0.75
Uniform Delay, d1	10.3			11.1	28.8	30.6
Progression Factor	0.84			1.00	1.00	1.00
Incremental Delay, d2	0.6			0.9	0.9	8.5
Delay (s)	9.2			12.0	29.7	39.1
Level of Service	A			B	C	D
Approach Delay (s)	9.2			12.0	33.4	
Approach LOS	A			B	C	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1593	36	29	1851	62	90	63	65	257
v/c Ratio	0.70	0.04	0.27	0.82	0.42	0.43	0.34	0.35	0.76
Control Delay	18.2	8.5	21.1	23.9	60.4	16.8	52.4	52.8	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	8.5	21.1	23.9	60.4	16.8	52.4	52.8	28.9
Queue Length 50th (m)	114.1	1.9	3.4	181.2	14.2	0.0	14.9	15.4	14.5
Queue Length 95th (m)	193.8	7.9	m4.5	m#265.2	27.4	15.2	26.7	27.2	39.4
Internal Link Dist (m)	172.2			343.5				160.3	
Turn Bay Length (m)		35.0	50.0						40.0
Base Capacity (vph)	2267	941	106	2267	266	305	553	553	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.04	0.27	0.82	0.23	0.30	0.11	0.12	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1061	1913	933	980
v/c Ratio	0.52	0.94	0.84	0.98
Control Delay	6.1	35.2	46.3	57.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.1	35.2	46.3	57.9
Queue Length 50th (m)	52.1	210.3	105.1	113.8
Queue Length 95th (m)	15.1	#273.8	130.3	#162.4
Internal Link Dist (m)	343.5	213.0	177.1	
Turn Bay Length (m)			130.0	130.0
Base Capacity (vph)	2028	2028	1110	1004
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.52	0.94	0.84	0.98

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	340	128	424	359	42	170
v/c Ratio	0.15	0.12	0.48	0.12	0.22	0.63
Control Delay	7.1	1.8	7.6	3.5	41.5	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	1.8	7.6	3.5	41.5	17.5
Queue Length 50th (m)	10.8	0.0	9.8	4.5	3.6	0.0
Queue Length 95th (m)	18.7	6.4	67.5	24.0	8.4	18.2
Internal Link Dist (m)	147.4			299.4		
Turn Bay Length (m)		85.0	250.0			
Base Capacity (vph)	2311	1080	924	2923	217	287
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.12	0.46	0.12	0.19	0.59

Intersection Summary

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	852	1080	526	345
v/c Ratio	0.41	0.51	0.60	0.79
Control Delay	10.5	13.7	25.7	35.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.5	13.7	25.7	35.1
Queue Length 50th (m)	27.4	54.3	33.7	45.6
Queue Length 95th (m)	69.7	88.8	39.9	65.1
Internal Link Dist (m)	299.4	163.7	168.2	
Turn Bay Length (m)				100.0
Base Capacity (vph)	2067	2108	1266	605
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.51	0.42	0.57

Intersection Summary

Appendix E: Kirby Grade Separation Timing and Requirements

City of Vaughan

February 25, 2018

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Contents

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Exhibits

1 Introduction

The following memorandum documents HDR's recommendations for the construction of the Kirby Road grade separation at the Barrie GO Rail line as they relate to the construction of the Kirby GO Station.

Due to a number of benefits with respect to safety, delay, construction timing, and GO Station operations, it is recommended that the design and construction works for the grade separation of Kirby Road at the Barrie GO Rail line be advanced such that it is completed in time for the opening of the Kirby GO Station, development within Block 27, and a Highway 400 interchange.

Further support for this grade separation is noted since Metrolinx has identified it as a Tier 1 priority for grade separation (as noted in Metrolinx's February 17, 2017 Memorandum regarding the RER Level Crossings Strategy).

2 Summary

Advancing construction timing would provide the following benefits:

2.1.1 Usage and Existing Conditions

Safety – Avoid level crossing of Kirby Road with the Barrie GO line prior to development and GO Station operations:

- With all-day two-way train service, Transport Canada's grade separation warrant exposure index threshold of 200,000 will be exceeded by 16 times;
- Kirby Road has a 4% downgrade towards the level crossing which increases safety risk for heavy vehicles during slippery or icy conditions;
- Minimize conflicts between GO trains and pedestrians and cyclists;
- Eliminates unsafe behaviour by motorists, pedestrians, and cyclists as seen at similar level crossings where the GO station is adjacent to the crossing.

Delays – Eliminate delays to transit, autos, pedestrians, and cyclists with associated with a level crossing as soon as other level crossings where the GO station is adjacent to the crossing

2.1.2 Operations

Avoid disruption of GO station access – Any vehicular, transit, and pedestrian access to an at-grade Kirby Road would need to be closed during construction of the Kirby grade separation, Traffic would have to be re-routed to Keele Street during the construction period.

Minimize disruption to GO train services – Building of the grade separation when the Station is operating would require closing of the train tracks for some time to allow for the installation of the grade separated bridge.

2.1.3 Cost and Constructability

Minimize construction duration – Building the Kirby grade separation prior to significant development, the Kirby GO Station and a Highway 400 interchange would potentially allow for

full closure of the road to reduce construction duration, and disruption to traffic and adjacent businesses.

2.1.4 Minimize throwaway construction costs

- Existing Kirby Road is a two-lane rural road. If the level crossing is retained, existing Kirby Road would need to be upgraded to an urbanized cross-section and widened with turning lanes to serve the GO Station and Block 27. This reconstructed Kirby Road would need to be removed during construction of the grade separation.
- Should the grade separation be built while the GO station is already operational, a detour road would need to be built, to maintain traffic access. The detour road not only disrupts station operations, but also adds throwaway construction costs.
- Minimize risks with respect to the relocation and coordination of servicing infrastructure and utilities required during construction.

The following sections provide further documentation and supporting rationale for this recommendation, as well as feasibility analysis of the grade separation and required infrastructure in support of the City of Vaughan's Kirby GO Transit Hub Sub-Study.

3 Existing Condition of Kirby Road

Kirby Road is currently under jurisdiction of the City of Vaughan with a maximum peak hour, peak direction volume of 560 and volume to capacity ratio of 0.62. The Barrie GO line crossing west of Keele Street is currently at-grade, and there is no interchange with Highway 400. Kirby Road also terminates at Dufferin Street.

Exhibit 1: Kirby Road planned improvements (Source: York Region TMP)

4 Planning Context

4.1.1 York Region's Initial Response to RER Service Concept (September 2015)

In a York Region Committee of the Whole meeting, the Metrolinx RER Service Concept was discussed including the benefits the concept would have for York Region as well as any issues and challenges. To facilitate the goal of implementing RER in York Region, a number of recommendations were made to the Committee of the Whole. Recommendation #1 highlights

the need to prioritize grade separations across the Regional network, and in full reads as follows:

> **Recommendation 1**
>
> Staff explore the option of combining the allocated funding from the Province with grade separation funding from the Region and local municipalities to maximize the number of grade separations that could be constructed to coincide with the opening of RER. Grade separations will be prioritized across the Regional network in a manner consistent with the Council approved Roads Capital Prioritization Process in order to derive the maximum benefit from currently available funding.
>
> Staff update Council as the prioritization and discussions with Metrolinx and local municipalities continues.

4.1.2 York Region TMP 2016

York Region's 2016 TMP establishes the need and justification for the Kirby Road widening from 2 to 4 lanes, completion of the missing link between Dufferin and Bathurst, grade separation, and a Highway 404 interchange by 2027 to 2031, as illustrated in **Exhibit 2**.

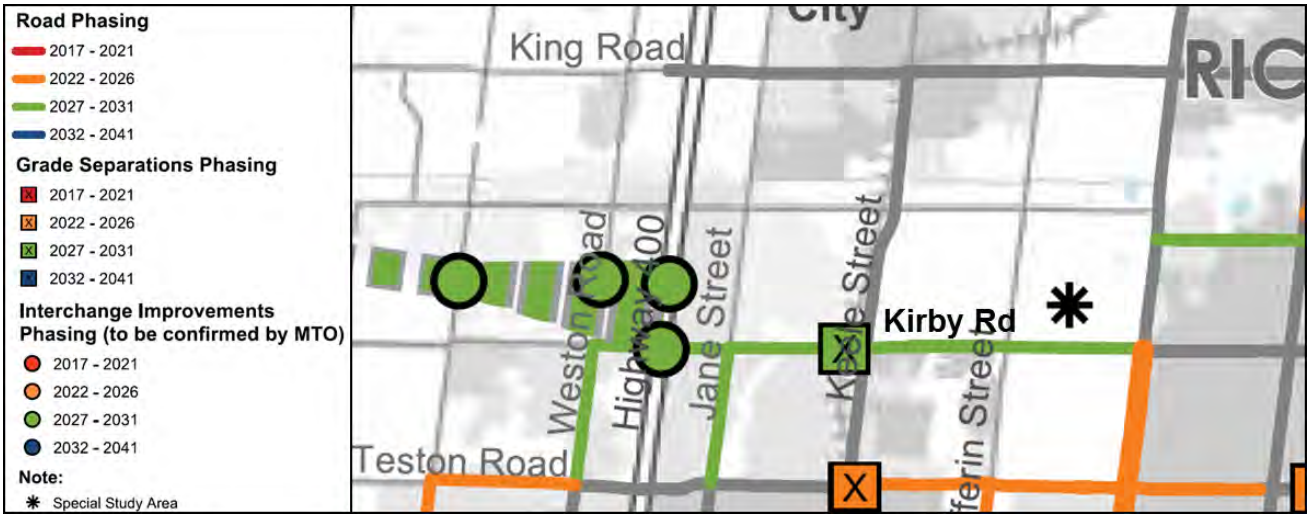


Exhibit 2: York Region TMP Road Improvement Timing (Source: York Region TMP)

Further, the TMP identifies Kirby as a candidate for future road jurisdiction transfer as per its updated Regional Road Assumption Policy. Regional Road right-of-way widths for 4 and 5 lanes are 36m.

It is recognized that the status of the Kirby Road interchange at Highway 400 is currently in question as the GTA West Corridor EA study is currently on hold. In general however, any interchange with Highway 400 at Kirby Road would significantly increase traffic on Kirby Road.

The York Region TMP also identifies Kirby Road as a Strategic Goods Movement Corridor.

4.1.3 City of Vaughan TMP 2012

The City's TMP identifies improvements to Kirby Road from Jane Street to Bathurst Street including the grade separation at the Barrie GO Rail line, by 2031.

4.1.4 GO RER 10 Year Program

Kirby GO Station was identified in the GO Regional Express Rail 10-year Program. The City of Vaughan is currently conducting the Kirby GO Transit Hub Sub-Study as part of the Block 27 Secondary Plan Study to ensure adequate planning to support the development of the GO Station.

5 Future Traffic on Kirby Road

Inclusive of the identified planned improvements by 2041, the York Region TMP forecasts approximately 1,520 peak hour, peak direction vehicles on Kirby Road. AADT information which provides input into the grade separation warrant analysis is provided in **Table 1**.

It is noted that this forecast includes a new Highway 400 interchange at Kirby Road. Even without GTA West connection to Hwy 400, having a Kirby GO station there and the future role of Kirby Road to carry Regional Traffic would significantly increase the demand on Kirby Road. With all-day two-way 15 minute GO train service, the need for the grade separation is imminent.

Table 1: Barrie GO Line AADT's at road crossing locations in York Region (Source: York Region's Initial Response to RER Service Concept)

Line	Crossing Location in York Region	Road Jurisdiction	Daily Trains (2-way)[1]			No. of Lanes (2-way)[2]		Speed (km/h)	AADT[3]				
			existing	2021	RER[4]	existing	2041		existing	2021	2025[4]	2031	2041
Barrie Line													
	Union - Aurora		12	30	120								
1	Rivermede Rd	Vaughan				4	4	50	7,460	8,210	8,510	8,960	9,700
2	Langstaff Rd	Regional				2	6	60	15,800	19,200	32,640	52,800	58,100
3	Rutherford Rd	Regional				4	6	60	42,300	46,900	47,620	48,700	52,100
4	McNaughton Rd	Vaughan				4	4	50	11,130	12,250	12,700	13,360	14,470
5	Teston Rd	Regional				2	4	60	1,900	1,900	17,100	27,900	31,800
6	Kirby Rd[7]	Regional				2	4	60	4,600	3,800	4,000	27,900	31,800
7	King Vaughan Rd[7]	Regional				2	4	80	4,600	5,400	5,800	27,900	31,800
8	Station Rd	King				2	2	40	1,290	1,550	1,650	1,810	2,070
9	Dufferin St	Regional				2	2	70	11,100	12,700	13,340	14,300	16,100
10	15th Sdrd	Regional				2	2	60	6,000	7,000	7,120	7,300	8,000
11	Engelhard Dr	Aurora				2	2	50	7,660	9,200	9,810	10,730	12,260
12	Wellington St	Regional				2	2	50	18,200	20,700	21,500	22,700	25,100

6 Grade Separation Warrant Analysis

To determine whether a grade separated crossing should be considered at this location, an exposure index based on the "Inventory Manual: Municipal Roads and Railway Level Crossings, Ontario Ministry of Transportation" was used as follows:

Exposure Index = Total Number of Trains per Day x Daily Traffic Crossing Railway

Where:
Total Number of Trains per Day: According to GO Transit train schedules, a total 12 trains cross Kirby Road each weekday with five southbound AM and seven northbound PM GO trains. CN Rail does not provide train schedules and indicated in November 2013 that no CN trains use this line at present. By 2041 with RER all-day 2-way service every 15 minutes, 120 trains per day are expected.
Daily Traffic Crossing Railway: Based on AADT data identified in York Region's initial response to RER service concept, the AADT on Kirby today is 4,600 but will grow to 55,200 by 2041.

This calculation is traditionally used in Ontario as a baseline for determining if a grade separated crossing is warranted. If the exposure index exceeds 200,000, then a grade separation is warranted.

Based on the AADT and trains per day, the calculated train exposure index is not yet met today, but by 2031 and 2041 the exposure index is more than ten times as large as the warranted value for a grade separation. Exposure index calculations are provided in **Table 2**.

Table 2: Kirby Rail Exposure Indices

	Trains per Day	AADT	Train Exposure Index
Existing	12	4,600	55,200
2031	120 (RER)	27,900	3,348,000
2041	120 (RER)	31,800	3,816,000

7 Kirby Road Grade Separation Required Infrastructure

7.1.1 Overpass / Underpass Grading Requirements

Grading requirements for two Kirby Grade Separation options at the Barrie GO Rail line were assessed, firstly a road overpass and secondly a road underpass.

The vertical profile drawing of the overpass and underpass options are provided in **Appendix E1**, while the grading impacts of the two options are illustrated in **Exhibit 3** and summarized in **Table 3** below. CAD drawings of the grading requirements for the overpass and underpass are provided in **Appendix E2** and **Appendix E3**, respectively.

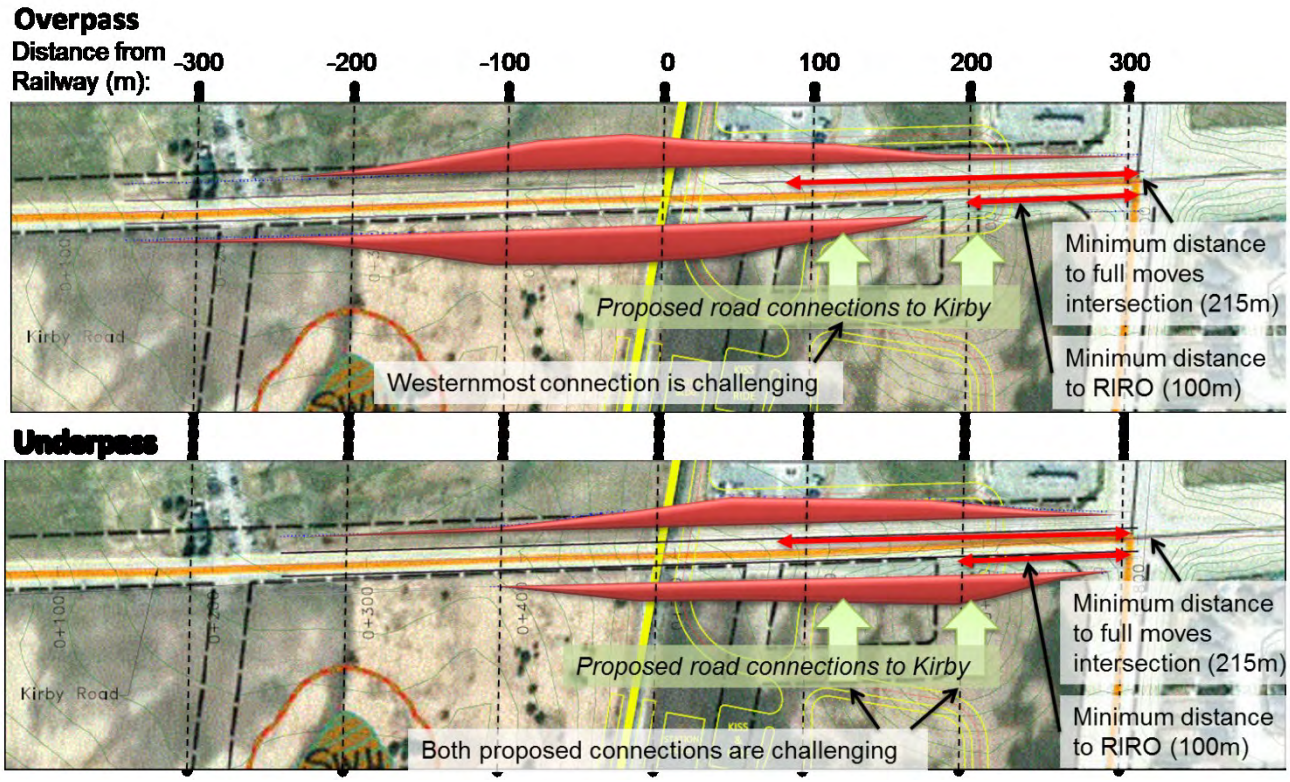


Exhibit 3: Kirby Road Grade Separation Options and Constraints

Table 3: Kirby Grade Separation – Grading Requirements

Kirby grade separation option	West of railway, south of Kirby	East of railway, south of Kirby
Underpass	Grading required to about 100m west of rail. **IMPACT ON ROW: negligible**	Grading required to Keele. An intersection could be provided about 60m west of Keele (Regional road clearance for RIRO is 35m), but would have to allow for significant downward slope of side street connecting to Keele. We would need to bring this into CAD to see how it might work. **IMPACT ON ROW: + 17m to about 100m west of Keele**
Overpass	Grading required to about 300m west of rail. An intersection potentially can be accommodated at 200m to the west (allowing for an upward slope of the side street up to Kirby). We would need to bring this into CAD to see how it might work. **IMPACT ON ROW: + 24m to about 200m west of rail tracks**.	Grading required to 140m w of Keele **IMPACT ON ROW: + 20m to about 200m west of Keele**.

In summary,

- With an underpass, connections to Kirby on the south side, east of the rail tracks are would require significant engineering works / structures (such as a retaining wall).
- Any road connections to Kirby Road east of the rail tracks should stay as far away from Keele as possible to avoid conflicts with eastbound traffic queues at Keele. Based on York Region's 2007 Access Guideline:
    - A full moves signalized intersection requires 215m minimum from Keele Street. This is not possible with the grading, even with the overpass option.
    - A Right-In-Right-Out intersection, depending on future road classification, would require approximately 40m to 100m from Keele Street.
- A signalized at-grade connection to Kirby is not possible east of the rail tracks with either an overpass or underpass
- A signalized intersection west of the rail tracks is possible less than 100m west of the railway with an underpass, and 200m-300m west of the railway with an overpass

Given the issues with the overpass options including the length of a bridge structure and grading requirements west of the rail tracks, and compared to the urban design benefits of an underpass structure, the Kirby GO Transit Hub Sub-study which is providing input to the Block 27 Secondary Plan study, is proceeding based on the assumption of a **Kirby Road underpass**.

7.1.2 Potential Supporting Street Network

Due to the distance of only 300m between the rail line and Keele Street, it is not possible to provide a full moves signalized intersection at Kirby Road with the Grade Separation in place and respecting York Region's minimum distance along commuter arterial roads of 215m. As such a proposed "jughandle" access system is being proposed similar to street configuration at Sheppard Avenue west of Leslie Street crossing the GO Richmond Hill line, illustrated in **Exhibit 4**.

Exhibit 4: Proposed supporting street network concept

8 Kirby GO Station Projected Ridership

Metrolinx has undertaken travel demand forecasts for the Kirby GO Station and they project daily ridership at the station to exceed 2,000 by 2031 (*Metrolinx Station Access Plan, 2016*). The Access Plan also identifies modal share targets for station access as follows, which help to inform station design:

- Walking: 12-14%
- Local Transit: 16-18%
- Cycling: 3-5%
- Pick-up and drop-off: 24-26%
- Drive and park: 40-42%
- Carpool passenger: 5-7%

Based on the projected demand, the Station Access Plan identifies a need for 1,000 parking spaces in the medium term and 1,700 spaces in the long term.

9 Constructability Considerations

Because Kirby Road is largely rural today with very little adjacent development and no Highway 400 interchange, there would be a number of benefits to advancing the grade separation of Kirby Road at the Barrie GO Rail line prior to these planned changes.

9.1.1 Traffic Maintenance on Kirby Road

Existing traffic volumes on Kirby Road may support full closure of the roadway to speed up construction duration and minimize property impacts. However if traffic volumes increase to a point where traffic must be maintained on Kirby throughout construction, then a temporary detour may need to be considered which could affect land requirements and station configuration.

9.1.2 Construction Duration

Advancing construction would facilitate full closure construction of the grade separation which provides a number of benefits including reduced construction duration, reduced costs, and worker and traveler safety. These benefits were quantified according to a 2003 study by the US Federal Highways Administration (FHWA). The results are summarized in **Table 4**.

Table 4: Full Road Closure Construction Benefits

Roadway	Duration	Worker and Traveler Safety	Cost	Quality	Public Sentiment
Portland, OR I-84	-85%	Improvement cited	-$100,000	Improved ride	Positive
Louisville, KY I-65	-95%	Improvement cited	Increased	Improved	Positive
Detroit, MI M-10	-71%	Improvement cited	Reduced MOT cost	Superior ride	n/a
Columbus, OH U-670	-63%	Improvement cited	-$8-10M	n/a	Positive
Kennewick, WA SR 395	-70%	Improvement cited	n/a	n/a	Positive
Wilmington, DE I-95	-75%	Improvement cited	Increased	Improved	Positive

Based on the data, construction durations are reduced by 63% to 95%. This equates generally to cost savings, but it is noted in the report that in some instances costs actually increased due to greater effort required to notify the public of the closure.

It is further noted that York Region recently constructed the widening of Warden Avenue between 16th Avenue and Major Mackenzie Drive as a full closure for a duration of 16 months. According to 2009 traffic data, the peak hour peak direction traffic flow at the north end of Warden Avenue was approximately 800 vehicles.

9.1.3 Throwaway Costs

Construction of the grade separation at a time after the opening of the Kirby GO Station and substantial development in Block 27 would require maintenance of traffic on Kirby Road through a complex traffic staging plan and/or construction of a detour route. In addition, internal street networks serving the GO station would be removed and reconstructed with the jug-handle system which is required due to the grade separation. In addition, advancing the grade separation would also minimize risks with respect to the relocation and coordination of servicing infrastructure and utilities required during construction.

Significant throwaway costs would occur if the grade separation is constructed after the GO station is in operation.

9.1.4 Disruption to GO Operations

If the grade separation were to be constructed with the GO station in place, it would result in significant disruptions to the operations of the GO trains and buses, particularly during construction of the bridge structure that would go over Kirby Road. Secondly, GO bus route running times would be affected by construction detours and traffic congestion.

9.1.5 Disruption to GO Customers

The over 2,000 customers projected to use Kirby GO by 2031 would be disrupted during construction due to travel detours and increased travel delays.

9.1.6 Disruption to Business on the north side of Kirby Road

Existing businesses on the north side of Kirby Road include a truck centre and service retail. Minimizing construction duration by advancing the grade separation would be beneficial.

9.1.7 Potential Property Requirements

The jug-handle system identified to provide access to the Kirby GO station from Kirby Road may have potential impacts to the properties on the north side of Kirby Road. A conceptual illustration of the potential impacts is provided in **Exhibit 5**.

Exhibit 5: Potential Property Requirements

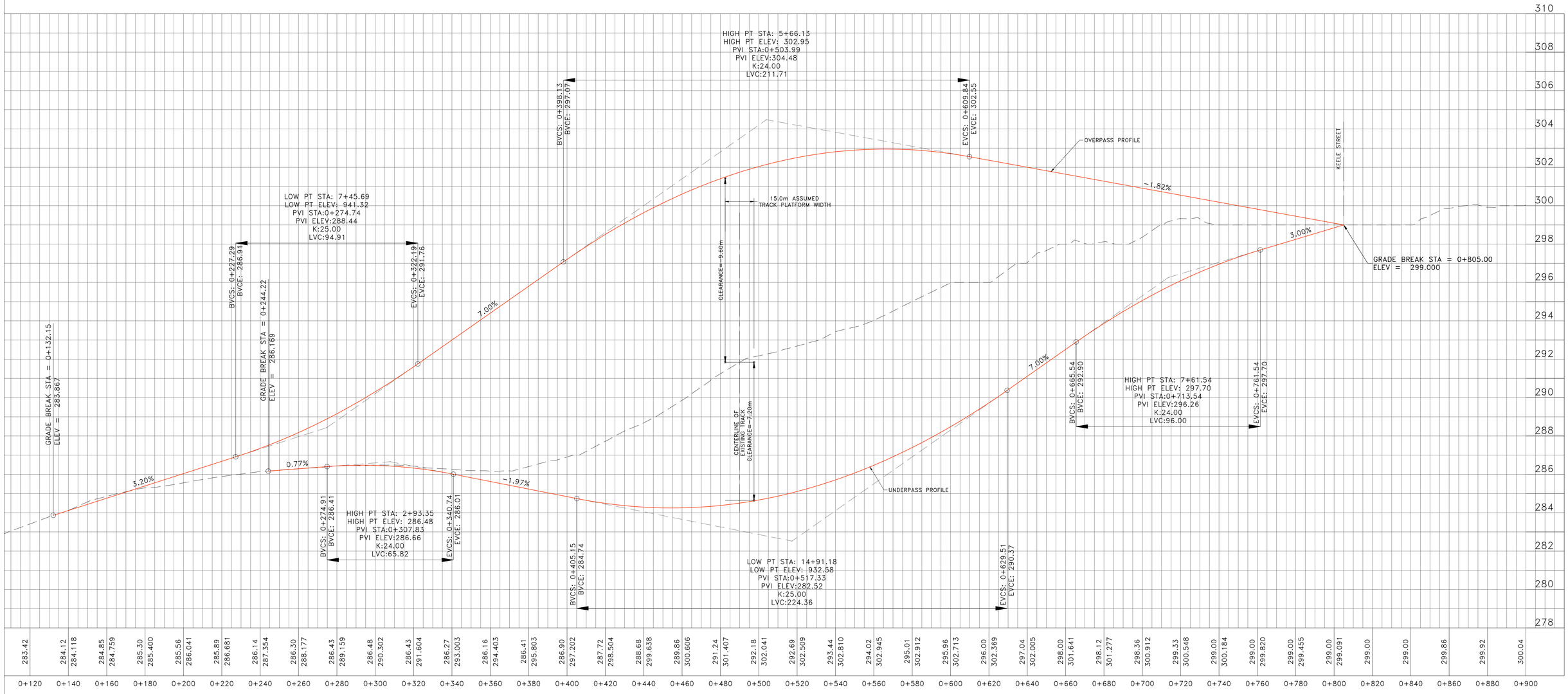
10 Recommendations

Based upon the findings of this memorandum, ***it is recommended that the design and construction works for the grade separation of Kirby Road at the Barrie GO Rail line be advanced such that it is completed in time for the opening of the Kirby GO Station, development within Block 27, and a Highway 400 interchange.***

Appendix E1

Kirby Road Grade Separation Conceptual Profiles

Ran 2 options for a Kirby road overpass and underpass.
The underpass looks like a feasible option.
Overpass: 620m fill / structure
Underpass: 520m cut
Nov 16, 2015 from HDR

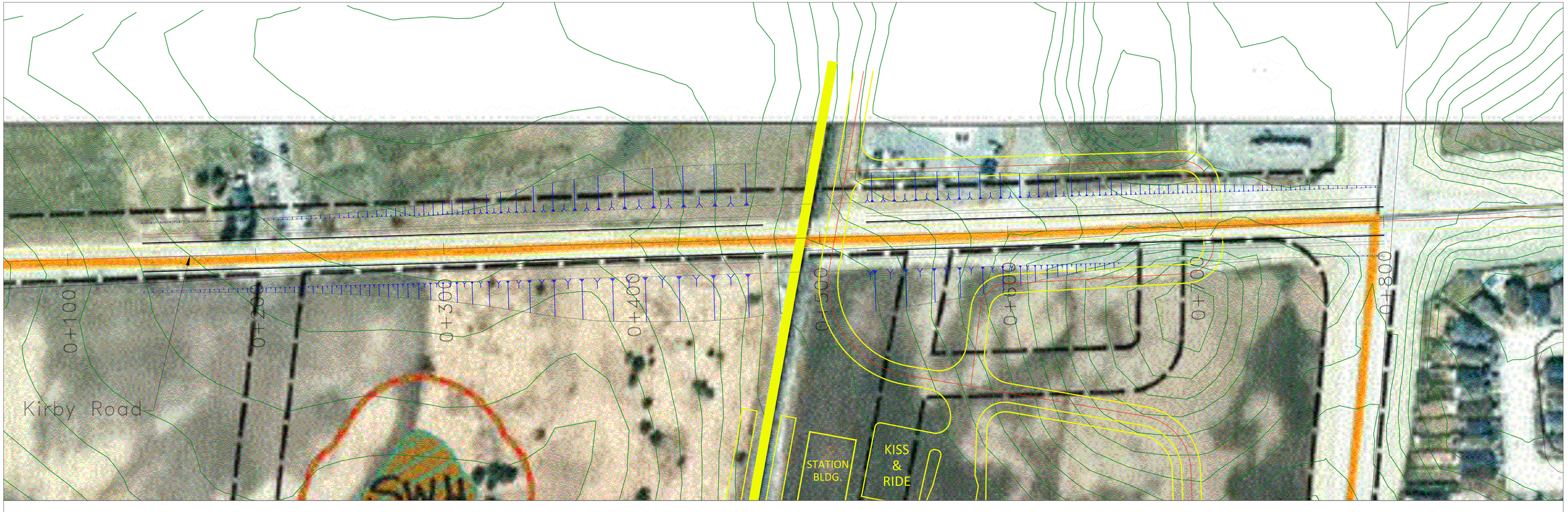


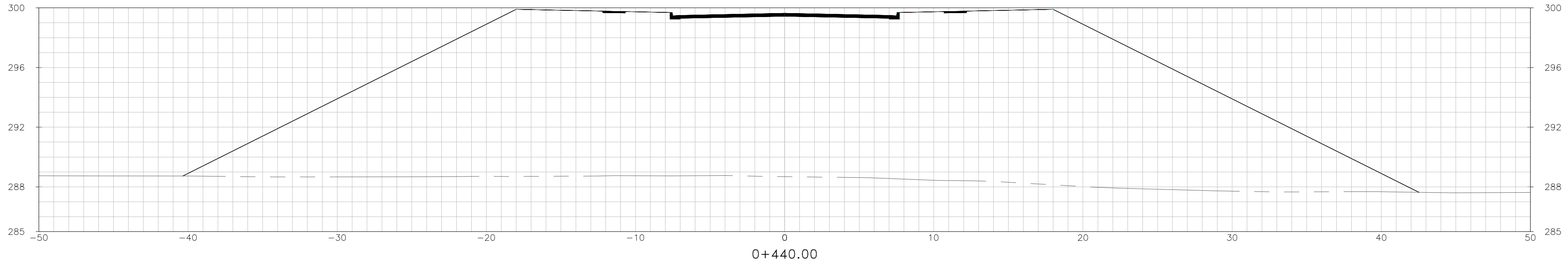
Kirby Road PROFILE

PROPOSED ROAD PROFILE (URBAN ARTERIAL UNDIVIDED, 80KM/H DESIGN SPEED)

Appendix E2

Kirby Overpass Grading Limits

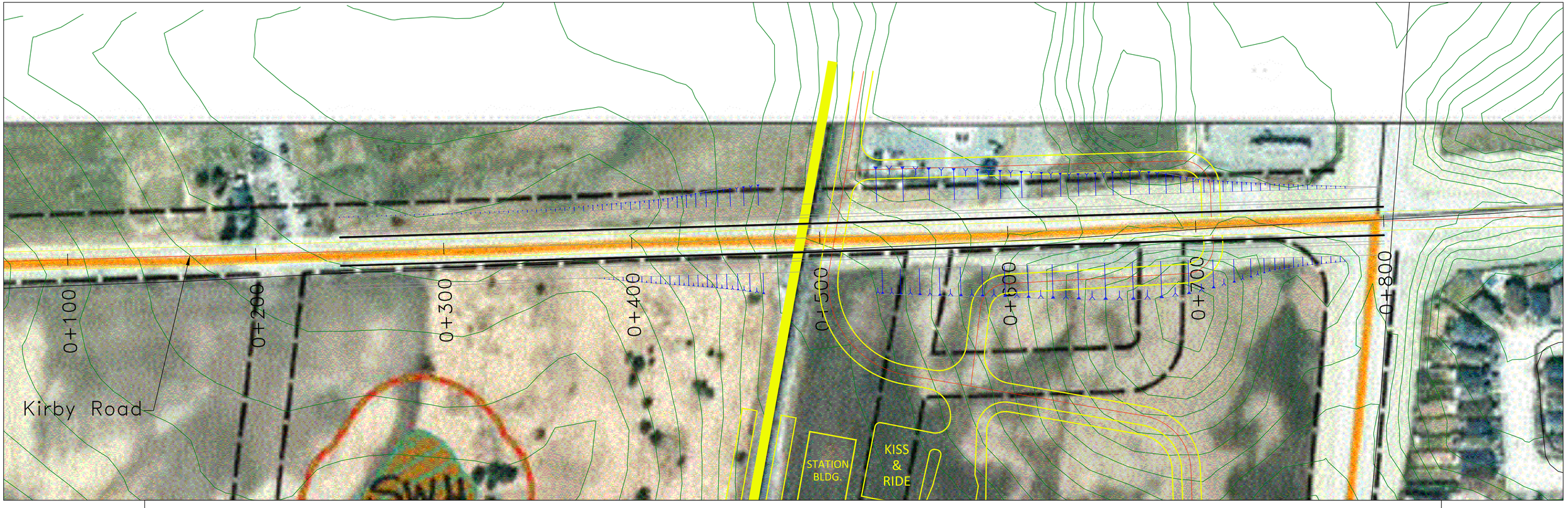

0+100
0+200
0+300
0+400
0+500
0+600
0+700
0+800
Kirby Road
STATION BLDG.
KISS & RIDE

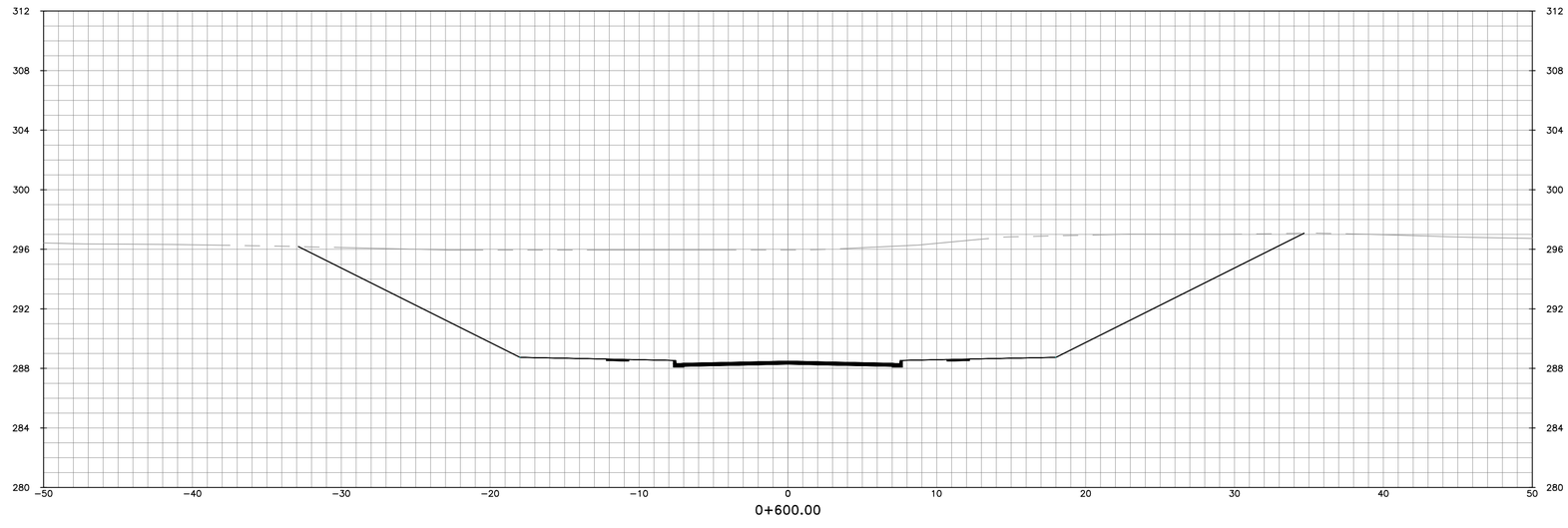

300
296
292
288
285
−50
−40
−30
−20
−10
0
10
20
30
40
50

0+440.00

Appendix E3

Kirby Underpass Grading Limits


0+100
0+200
0+300
0+400
0+500
0+600
0+700
0+800
Kirby Road
STATION BLDG.
KISS & RIDE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304
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296
292
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284
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−50
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0+600.00

Appendix F: Satisfying EA Requirements

City of Vaughan

February 24, 2018

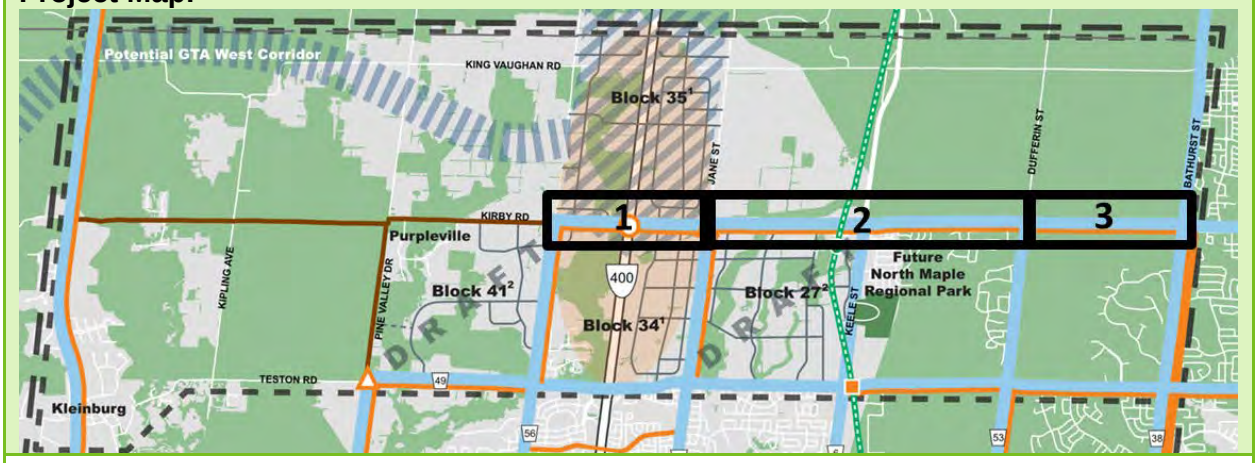
Kirby Road Widening and New Construction

Purpose: To increase east-west capacity and to meet the travel demands for growth in the NVNCTMP study area including Blocks 41 and 27 New Communities and Highway 400 North Employment Lands, and the future Kirby GO station.

Project Description	
Name	Kirby Road
Project Limits	Weston Road to Dufferin Street widening, Dufferin Street to Bathurst Street new construction.
Length	6.1km widening, 2km new construction.
Project Type	Minor Arterial Road Widening 2 to 4 lanes, Minor Arterial Road new construction at 4 lanes.
Proposed Phasing	By 2026
Cost	$135M (not including Highway 400 interchange and not including Barrie GO line grade separation).

Project Location and Environmental Features

Project Map:



Justification:

The need for Kirby Road improvement was assessed and recommended in both the Vaughan Transportation Master Plan and the York Region Transportation Master Plan which include widening to 4 lanes and completion of the "missing link" between Dufferin Street and Bathurst Street at 4 lanes. Kirby Road will have a regional function as development occurs and is also identified in the York Region TMP as a strategic goods movement corridor. It is anticipated and recommended to be transferred to Regional jurisdiction, requiring a ROW of 36 m to function as a 4-lane arterial road in the future.

Due to regional connectivity and traffic capacity need, as well as the benefits to local development and the future Kirby GO station, the following improvements are recommended, specific to the three segments identified in the Project Map:

1. Kirby Road from Weston Road to Jane Street: Widening from 2 to 4 lanes to a 36m right-of-way width. The timing of this improvement is dependent firstly on a Kirby Road interchange at Highway 400, and both of these improvements are dependent on the

outcome of the GTA West Corridor EA study.

2. Kirby Road from Jane Street to Keele Street: Widening from 2 to 4 lanes to a 36m right-of-way width. The timing of this improvement is dependent on development in Block 27, the Kirby GO Station, and Metrolinx implementation of all-day two-way GO rail service on the Barrie Rail Corridor, anticipated by the year 2026. This increase in train service will trigger the need for grade separation of Kirby Road, and it is recommended prior to the opening of the rail line to widen the roadway and construct the grade separation.
3. Kirby Road from Keele Street to Bathurst Street: Widening from 2 to 4 lanes to a 36m right-of-way width between Keele Street to Dufferin Street is needed only with the completion of the Kirby missing link. Thus it is recommended that the missing link be considered in conjunction with the Keele to Dufferin section.

Alternatives Considered	
Transit	Improved transit services are already planned in the Region and are accounted for in the assessment, including Viva Silver on Major Mackenzie Drive. Without the road network in place there are limited opportunities for improving east-west transit connectivity due to the missing links of both Kirby Road and Teston Road.
Roads	Road network options considered alternative improvements to Kirby Road widening and new construction. This included no construction of the Kirby Road missing link. Without the missing link and road widening, total AM peak hour congested VKT grows by 4,000 while congested VHT grows by 150. Improvements to roadways other than Kirby Road will not benefit east-west travel demand generated by the New Communities and 400 North Employment Lands.

Potential Socio-economic and Environmental Impacts: Property acquisitions may impact existing landowners adjacent to the Kirby Road corridor. Upon completion this project should provide an overall benefit to existing and future residents and workers in the study area. Finally, there are significant environmental impacts associated with the Kirby Road missing link.

Conclusion: Recommended for Phase 3 and 4 EA study.

Block 27 Street 2

Purpose: To provide a continuous east-west street through Block 27, ,providing access to Jane Street, Keele Street, and the lands between the Barrie GO Rail tracks and Keele Street.

Project Description	
Name	Street 2 (Block 27)
Project Limits	Jane Street to Keele Street
Length	2km
Project Type	New construction Major Collector Road at 4 lanes.
Proposed Phasing	By 2026
Cost	$24M (roadway plus four valley crossing structures but excluding road-rail grade separation)

Project Location and Environmental Features	
Project Map: 	**Justification:** Street 2 is the only east-west collector road connecting Jane Street to Keele Street through Block 27 and thus should be protected for 4 travel lanes. Street 2 is the only feasible continuous east-west roadway within Block 27 due to the railway constraint, its proximity to Keele Street, and need for grade separation per Metrolinx Level Crossings Policy that no new level crossings should be created on its corridors.

Alternatives Considered	
Transit	Transit improvements alone will not be able to serve east-west demand within Block 27. Street 2 requires a wider paved surface to accommodate potential transit service.
Roads	Road network considered the no connection to Keele Street option. Accesses at Teston Road and Kirby would be overburdened while access to Keele Street would require extra turns on the Regional roadway. Current planning policies promote building a complete network with a minimum of two collector roads in each direction. Alternative alignments of Street 2 were also considered to minimize construction costs of the grade separation.

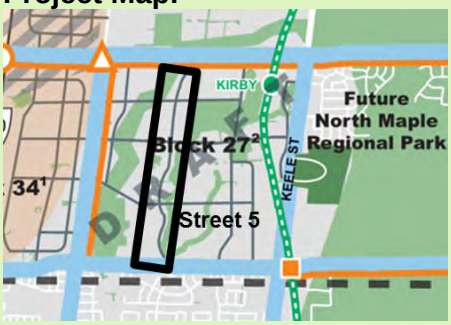
Potential Socio-economic and Environmental Impacts: Property acquisitions may impact existing landowners adjacent to the Street 2 corridor. Four valley crossings are identified which should be designed to mitigate impacts to the natural environment.

Conclusion: Recommended for Phase 3 and 4 EA study.

Block 27 Street 5

Purpose: To provide a continuous north-south street through Block 27, providing access to Kirby Road and a direct connection to Cranston Park Drive at Teston Road.

Project Description	
Name	Street 5 (Block 27)
Project Limits	Kirby Road to Teston Road
Length	2km
Project Type	New construction Major Collector Road at 4 lanes.
Proposed Phasing	By 2026
Cost	$12M (roadway plus three valley crossing structures)

Project Location and Environmental Features	
Project Map:  	**Justification:** **Street 5** is one of two continuous north-south collector roads and provides direct connectivity to the existing community south of Teston Road via Cranston Park Drive. Projected travel demand is close to the theoretical capacity for a collector road, but regardless it is recommended that this street be protected for 4 travel lanes to match the cross-section of Cranston Park Drive. As detailed in **Appendix A**, it is recommended also to align Street 5 with Cranston Park Drive despite the presence of a watercourse on the north side of Teston Road. The needs on Street 5 are further emphasized since the other north-south collector road, Street 6, requires a significant crossing through wooded areas and that connection is subject to further study.

Alternatives Considered	
Transit	Transit improvements alone will not be able to serve north-south demand within Block 27. Street 5 requires a wider paved surface to accommodate potential transit service continuous with existing service on Cranston Park Drive.
Roads	Road network considered the no connection to Cranston Park Drive option - this would increase traffic volumes on Teston Road and reduce the efficiency of any potential transit service on Cranston Park Drive to extend north into Block 27.

Potential Socio-economic and Environmental Impacts: Property acquisitions may impact existing landowners adjacent to the Street 5 corridor. Connection to Cranston Park Drive may require channel relocation. 3 valley crossings are identified which should be designed to mitigate impacts to the natural environment. It is also noted there is potential flood hazard that may impact the feasibility of this connection.

Conclusion: Recommended for Phase 3 and 4 EA study.

Block 27 Street 8

Purpose: To provide a new north-south street in Block 27, serving the local precinct, mid-rise area and the Kirby GO station providing a connection to Keele Street and the main entrance to North Maple Regional Park on the east side of Keele Street.

Project Description	
Name	Street 8 (Block 27)
Project Limits	Kirby Road to Keele Street
Length	1.2km
Project Type	New construction Major Collector Road at 4 lanes.
Proposed Phasing	By 2026
Cost	$14M (roadway plus one valley crossing structure)

Project Location and Environmental Features

Project Map:

Justification:
Street 8 provides connectivity through Block 27 between the future Kirby GO station and the North Maple Regional Park. Given higher density land uses surrounding the GO station it is recommended to protect for 4 lanes on Street 8 with further consideration for potential transit vehicles as well connecting to the GO station.

Alternatives Considered	
Transit	Transit improvements alone will not be able to serve north-south demand within Block 27. Street 8 requires a wider paved surface to accommodate potential transit service between Kirby GO and North Maple Regional Park.
Roads	Different network configurations were considered to serve the lands east of the Barrie GO rail line. The final alignment was recommended to connect to Keele Street and North Maple Regional Park as well as the Kirby GO station.

Potential Socio-economic and Environmental Impacts: Property acquisitions may impact existing landowners adjacent to the Street 8 corridor. 1 valley crossing is identified which should be designed to mitigate impacts to the natural environment. North section (between Streets 1 and 2) may be encumbered by flood plain.

Conclusion: Recommended for Phase 3 and 4 EA study.

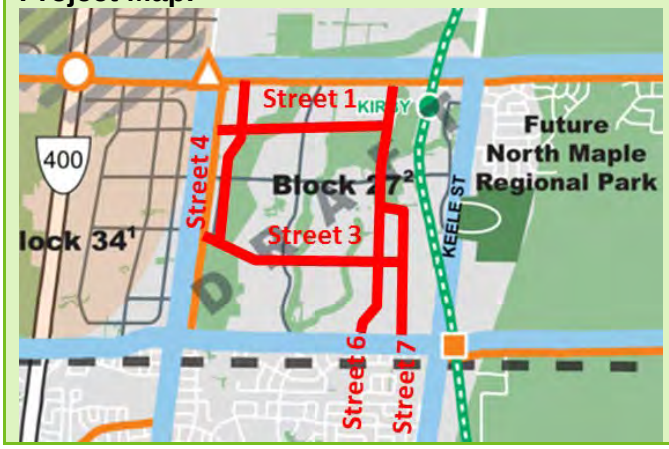
Block 27 Collector Road Network

Purpose: To provide a well connected, fine-grain collector road system that provides opportunities for active transportation and transit, and minimizes internal and surrounding arterial road network traffic congestion.

Project Description	
Name	Block 27 Minor Collector Roads
Project Limits	Block 27
Length	7.9km
Project Type	Minor Collector Road new construction at 2 lanes.
Proposed Phasing	By 2026
Cost	$29M (structures only)

Project Location and Environmental Features

Project Map:



Justification:
Street 1 and Street 3 combined with Street 2 provide excellent east-west capacity to serve the proposed development. They also provide direct connections to planned roadways within Block 34.

Streets 4, 6 and 7, combined with Streets 5 and 8 provide excellent north-south connections, and meet City policy for minimum 2-3 collector roads in each direction per block area.

Alternatives Considered	
Transit	Transit improvements alone will not be able to serve growth within Block 27.
Roads	Block 27 network alternatives were identified in **Appendix A**.

Potential Socio-economic and Environmental Impacts: The development of the preferred collector road alternative will support the growth of Block 27. As there are a number of watercourses within Block 27, development of a fine-grained collector road system will have a number of valley crossings to construct (approximately 10).

Conclusion: Recommended for Phase 3 and 4 EA study.

Block 41 Collector Road Network

Purpose: To provide a well connected, fine-grain collector road system that provides opportunities for active transportation and transit, and minimizes internal and surrounding arterial road network traffic congestion.

Project Description	
Name	Block 41 Minor Collector Roads
Project Limits	Block 41
Length	6.0km
Project Type	Minor Collector Road new construction at 2 lanes.
Proposed Phasing	By 2026
Cost	$17M (valley crossing structures only)

Project Location and Environmental Features

Project Map:

Justification:
The Block 41 collector road network provides connections to the Regional Road system despite major natural and built-up barriers. This includes major watercourse and Natural Heritage Network corridors, the TransCanada Pipeline transformer station in the centre of the block, and finally existing estate homes in the northwest quadrant.

Because of these constraints and overall lower anticipated levels of development in Block 41 compared to Block 27, the collector road system in Block 41 is sufficient as minor collector roads.

Alternatives Considered	
Transit	Transit improvements alone will not be able to serve growth within Block 41.
Roads	Block 41 network alternatives were identified in **Appendix A**.

Potential Socio-economic and Environmental Impacts: The development of the preferred collector road alternative will support the growth of Block 41. As there are a number of watercourses within Block 41, development of a fine-grained collector road system will have a number of valley crossings to construct (approximately 7).

Conclusion: Recommended for Phase 3 and 4 EA study.

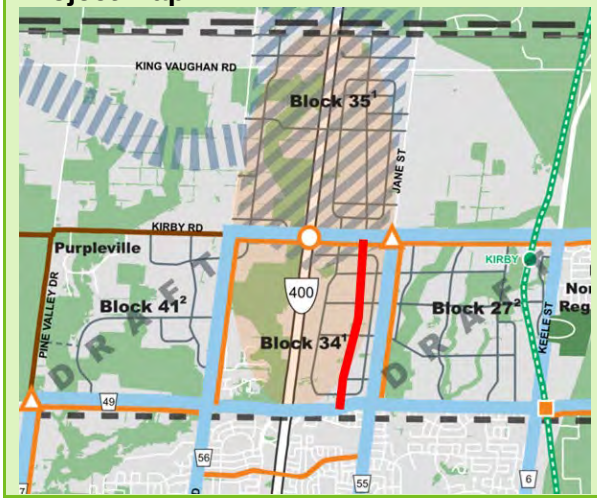
Block 34 North-South Collector Road

Purpose: To support growth in Block 34.

Project Description	
Name	Block 34 North-South Collector Road
Project Limits	Kirby Road to Teston Road
Length	2.0km
Project Type	Major Collector Road new construction at 4 lanes.
Proposed Phasing	By 2031
Preliminary Cost	$22M (roadway plus three valley crossing structures)

Project Location and Environmental Features

Project Map:



Justification:
Based on the demand forecasting work for the NVNCTMP, the north-south collector road, east of Highway 400 from Kirby Road to Teston Road requires 4 travel lanes and thus should be protected for a Major Collector road at 26m right-of-way width and 14m paved surface. The other roads within Blocks 34 and 35 are minor collector roads.

Alternatives Considered	
Transit	Transit improvements alone are not sufficient to support anticipated growth in demand within Block 34.
Roads	Network analyses were conducted for with and without 4-lane designation of the north-south collector. Operations are improved with 4 lanes.

Potential Socio-economic and Environmental Impacts: The north-south collector road will support the growth of the employment lands. Construction of this roadway requires 3 valley crossings.

Conclusion: Recommended for Phase 3 and 4 EA study.

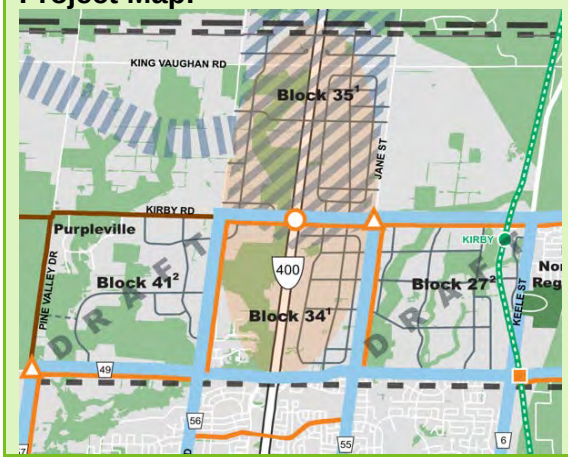
Highway 400 Midblock Crossings

Purpose: To support growth in Blocks 27 and 41 and the Highway 400 North Employment Lands, and the overall NVNCTMP study area.

Project Description	
Name	Highway 400 Midblock Crossings (at least one)
Project Limits	King-Vaughan Road to Teston Road, between Weston Road and Jane Street
Length	6.0km
Project Type	Minor Arterial Road new construction at 4 lanes.
Proposed Phasing	By 2031
Preliminary Cost	$24M (per crossing – roadway plus one structure)

Project Location and Environmental Features

Project Map:



Justification:
At least one midblock crossing of Highway 400 is recommended to support the growth of the New Communities and the Highway 400 North Employment Lands. Furthermore, the development within Block 35 is subject to the outcome of the GTA West study.

Once additional clarity on the GTA West corridor is provided, it is recommended that the City undertake more detailed study to identify a preferred solution for this midblock crossing.

Alternatives Considered	
Transit	Transit improvements alone are not sufficient to support anticipated growth in demand.
Roads	Network analyses were conducted for two midblock crossings, Block 34 only and Block 35 only. Two midblock crossings are beneficial but subject to further study.

Potential Socio-economic and Environmental Impacts: The development of the preferred collector road alternative will support the growth of the new communities and the employment lands. Both the Block 34 and Block 35 crossings must traverse Natural Heritage Network.

Conclusion: Recommended for further EA study.

Appendix G: Travel Demand Management

City of Vaughan

February 24, 2018

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North Vaughan and New Communities Transportation Master Plan

TDM Recommendations

Prepared by UrbanTrans North America – July 11, 2016

The development of new residential and commercial space in the North Vaughan study area provides unique opportunities to employ transportation demand management strategies during change moments. Research shows that people are more likely to consider a change in their commute when there is a change in residence, school or work location than at other times. In addition to implementing programming from the start, the new developments can be designed with infrastructure that will support the use of non-drive alone travel modes. The strategies below can be implemented and promoted in partnerships with existing and new partners to promote sustainable and active transportation throughout North Vaughan. The Implementation section of this document lists important partners and their roles in supporting the recommended strategies laid out in this TMP.

1) Residential/Community TDM

Communities in North Vaughan offer opportunities for residential or community based TDM approaches, including the following:

- Provide individualized travel planning and marketing targeted at all new residents in blocks 27 and 41.
    - Prioritize efforts around existing and planned GO Train stations.
    - Work with developers to distribute resident travel option kits when new residents move in.
- Create a community champions program. Identify one neighbourhood as a pilot site where community champions are recruited to represent the neighbourhood, help promote programs, and gather feedback from residents.
- Pull together all transportation related resources into a one-stop shop for both travel options and TDM and active transportation programs that are available in the new blocks. This could be done by leveraging the existing brand and web site or by creating a new brand identify and site. The site will include online resources about transportation options, the Smart Commute trip planning tool, information about school travel planning and employer programs available in that district, as well as connections to programs that promote physical activity, such as those resulting from the Active Together Master Plan.

- Explore the possibility of collaborating with local neighbourhood social networks, such as GoNeighbour[1], to promote alternative travel options, services, events and tools to residents, including the Smart Commute trip planning and ride matching tool. The tool offers the option of creating neighbourhood-based networks, allowing users to limit their search for carpool or vanpool partners to people in their neighbourhood, whom they are likely to know and trust.
- Design TDM programs for planned recreational facilities in and easily accessible from the study area as well as playgrounds and libraries (Maple Community Centre, Vellore Village Community Centre).
- Formalize any other public health links and use local public events as a way to promote residential and community based programs.

Example: The City of Vaughan is currently actively involved in a York Region TDM pilot project for three new residential developments: Nashville Heights, Minto WaterGardens, and Patterson Maple. The project called MyTrip was designed to inform residents in new developments of their travel options using individualized travel planning. Phase 1, consisting of understanding current travel patterns and needs, has been completed. Starting in May of 2016, program delivery will begin and may include community events, workshops and demonstrations, individual household travel planning meetings, online tools, and take-home travel planning packages. The results of this project, which will be completed in 2017, will inform future residential TDM projects in the York region and yield specific contextual and prioritization information for future projects in North Vaughan[2].

Partnerships and Resources: HealthYork (York Region Healthy Communities Partnership), Metrolinx Vaughan Cycling Forum

Expected Impact: Individualized Marketing projects in Canada, the United States, and Australia have yielded reductions in single occupancy vehicle (SOV) trip rates of up to 15 percent[3].

Funding Options: City of Vaughan

2) Developer TDM Opportunities

Reporting Requirements for Developers and Property Owners/Managers

The City of Vaughan currently requires commercial developments of more than 2,000 square metres and residential developments of more than 50 units to submit a TDM plan as part of the site plan and development approval process. To fulfill this requirement, a number of developers have engaged the local TMA, Smart Commute NTV, to assist with the development of TDM plans and to deliver programming. However, TDM program implementation by developers has been minimal and inconsistent, and long term programming by developers (and subsequently property managers) has been lacking. If not already in place or planned, the City of Vaughan should introduce reporting requirements for developers and/or property managers and employer tenants to submit periodic

[1] http://www.goneighbour.org/
[2] http://tinyurl.com/gn3x5q4
[3] Evaluation of 26 Australian TravelSmart Projects in the ACT, South Australia, Queensland, Victoria and Western Australia 2001-2005, 2005

reports detailing the progress made based on the TDM plan submitted. These would include trip generation and mode split updates as well as verification of installation and maintenance of TDM supportive infrastructure and implementation of TDM programs.

Reward/Recognition Program

Employers are currently recognized for excellence in implementing commute programs through SmartCommute's workplace designation program, which uses a scoring system to designate a workplace as standard, Silver or Gold; and the annual Smart Commute Awards program, which gives workplaces the opportunity to be nominated and win Workplace of the Year designation within each region. The City of Vaughan could build on this existing program and create additional recognition programs for developers and communities who are excelling in promoting alternative transportation.

Additional Developer Opportunities

In addition the city should explore the following:

- Consider granting lower parking requirements at local centres, near high-order transit hubs, and in primary centres or intensification areas in exchange for aggressive TDM programs, such as paying for transit passes, charging for parking or offering parking cash out programs. This is currently being piloted in the Halton region, where the City of Burlington recently created a tool that allows it to calculate parking reductions based on the TDM programs a developer commits to. Since the tool has only been completed and used for several months, it is too early to report results.
- Consider location specific requirements, such as unbundling parking for multi-family residential developments near the planned GO Train stations.
- Require that both commercial developers and subsequent tenants join Smart Commute.
- Pilot projects with private partnerships and government subsidies.

Example: In addition to the City of Burlington, the City of Regina allows parking reductions for certain new commercial developments that commit to implementing vanpool, carpool, or transit programs. Details are spelled out in a memorandum of agreement between the developer applicant and the City of Regina. The agreement also requires annual monitoring and reporting. More information can be found http://www.regina.ca/opencms/export/sites/regina.ca/residents/bylaw/.media/pdf/chapter-14-parking-and-loading-regulations.pdf. The city is currently reviewing its parking policies and considering reducing parking minimums, potentially introducing parking maximums, as well as examining unbundling parking in applicable areas, such as near transit nodes and in areas identified for intensification.

Partnerships and Resources: Smart Commute NTV

Expected Impacts: Impacts depend on the TDM supportive infrastructure and programs implemented and/or funded:

- Participation in a transportation management association can result in trip reductions of up to 3.4%[4] (assumes the employer support program will include: carpooling, ride matching,

[4] Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions, 2009.

preferential carpool parking, flexible work schedules for carpools, a half-time transportation coordinator, vanpool assistance, bicycle parking, showers, and locker facilities.

- Subsidized transit passes can result in VKT reductions of up to 20%, depending on the level of transit service available[5].
- Unbundling of residential parking costs can have an impact of reducing trips by 2.6% to 12.8% depending on the land use mix and accessibility of the site[5].
- Parking cash out programs, which offer employees to option to choose between a free parking spot and a daily or monthly amount of cash, can yield VKT reductions from 3% in suburban settings to 4.5% in suburban centers[4.]

Funding Options:

- The creation of a municipal parking authority was recommended in the City of Vaughan Official Plan 2010. Parking policy and pricing supports and strengthens the impact of TDM projects and may provide funding for programs.

3) School-Based TDM Programs

Create a policy that expands on existing school-based efforts and requires and funds school travel planning for new schools. Travel planning could include:

- Work with school board to pilot incorporating "Learn to Bike" programs into physical education classes.
- Incorporating active transportation infrastructure (active/safe routes to school) into new schools and their surroundings. Limit drop-off areas and prohibit idling, ensure pedestrian and bicycle network connectivity, provide plenty and visible bike parking. Provide no or limited student vehicle parking. Provide secure bike parking, shower facilities, and changing rooms for staff.
- Provide information and incentives for students and parents to change their behaviour (materials sent home to parents before new schools open and before the beginning of the school year, at open houses, etc.; cycling and walking safety workshops; meet ups for school pools; alternative transportation challenges; etc.).
- Provide resources and encouragement for parents to create school pools (carpools, walking/biking school bus), such as lists of families by neighbourhood or online tools that are provided to parents before the beginning of the school year.
- Include all staff and teachers in campaigns to create a culture of sustainable transportation.
- Provide bike safety education at all new schools.
- Take advantage of regional programs such as the Health York and Metrolinx programs.

Example:

- Several schools within the City of Vaughan have participated in York Region's Active and Safe Routes to School Program (ASRTS) with positive results. St. Michael the Archangel CES saw an almost 24% drop in vehicle counts between October 2012 and April 2013 after implementing school travel planning.

Partnerships and Resources:

[5] California Air Pollution Control Officers Association, 2010.

- http://www.saferoutestoschool.ca/school-travel-planning-toolkit
- http://www.hastebc.org/files/uploaded/mikesmith/Cycling%20Manual%20EN%281%29.pdf
- https://www.schoolbuscity.com/routes/
- http://www.metrolinx.com/en/projectsandprograms/schooltravel/school_travel.aspx
- http://www.healthyork.ca/bhc-school-transportation
- Cost/benefit analysis and other research: http://www.saferoutestoschool.ca/galleries/research-and-results#

Expected Impacts: A review of 19 school travel programs across Ontario with a focus on increasing active transportation to school found an average family car trip reduction of 2.1 percent, increase of carpool of 0.9 percent and a 1.1 percent increase in walking and biking. Family car mode share changes varied by school and ranged from a 14 percent reduction to a 6.3 percent increase. Factors that explain the large range include the difference in types of programs implemented and beginning mode share.

In the U.S. school pool programs focused on increasing carpooling to school have been very successful at reducing drive alone trips. The SchoolPool program, which is managed by the Denver Regional Council of Governments and provides parents with tools to organize carpools, resulted in a 20 percent reduction of school trips across the Denver region in 2015.

Funding Options: Potential to leverage additional TDM funds from Metrolinx

4) First/Last Mile Connections to Transit Stations

The potential Kirby GO Train station provides an opportunity to connect the station directly to the active transportation network and create a multi-modal mobility hub. The new station should be developed following the Metrolinx mobility hub guidelines, which emphasize seamless integration with other modes with a particular focus on pedestrian connectivity and parking management, a mixed-use environment, and an attractive public realm and station experience.

First and last mile strategies to be explored for both existing and new transit stations include the following:

- Build on the lessons of the Milton GO Connect pilot program, which allowed individuals to schedule a subsidized taxi/Lyft/Uber ride to and from the Milton GO Station using an app.
- Encourage carpooling to and from the local GO Train stations as well as the closest TTC subway station.
- Promote multi-modal trip planning apps that also take into account bike, carpool or walk access to stations (such as the CityMapper app).
- Create secure bike parking at GO Stations and prioritize AT infrastructure around stations.
- Explore dedicated park and ride lots for carpooling to the subway station in coordination with rideshare marketing to residents about HOV lanes (as suggested in the City of Vaughan Official Plan 2010).
- Pilot shuttle local shuttle buses from within the block to GO station/transit hub area.

Example: In collaboration with Metrolinx the Town of Milton recently completed a year-long funded pilot project that allowed transit riders to use an app to schedule a ride to and from the station for a

price of $1.95. This service supplemented local bus transit where/when not available. The fare was subsidized by Metrolinx and the Town of Milton and the service was operated by Milton Transit and a local taxi provider. The success of the project has prompted Metrolinx to continue to pursue collaboration with shared mobility providers. Results showed that demand response shuttles and similar new mobility solutions can be competitive for mid-lengths trips (2-4km) where transit coverage or frequency is limited and for longer trips (5-7km). In the U.S. both Uber and Lyft are starting to collaborate with transit agencies on providing first and last mile on demand service, including shared ride services, such as UberPool and Lyft Line.

Partnerships and Resources:

- Metrolinx pilot project https://goconnect.rideco.com/, http://www.milton.ca/MeetingDocuments/Council/agendas2016/rpts2016/ENG-003-16%20Dynamic%20Transit%20Pilot%20Project%20final.pdf
- Metrolinx Mobility Hub Guidelines: http://www.metrolinx.com/mobilityhubs/en/introduction/introduction.aspx

Expected Impacts: Depend on strategies implemented

Funding: The City should explore funding a partnership with Metrolinx on those elements of the TMP that relate to GO station access. As an example, in 2014, Metrolinx provided $140,000 to the Town of Milton to fund the one-year pilot of on-demand transit service serving the Milton GO station. Explore private partnerships with businesses and rideshare companies.

5) Business/Employer TDM Programs

Workplaces have a key role to play in the delivery of the TMP in general and TDM programs specifically. The daily commute is a significant trip generator, and workplaces are well placed to encourage their staff to use alternative modes and infrastructure, such as that laid out in the TMP. The city should seek to leverage partnerships with organizations and agencies already delivering sustainable transportation programs and messaging in order to maximize the reach of those efforts. As with residential TDM strategies, the development of new commercial districts in Blocks 34 and 35 as well as the development of small scale commercial space in Block 41 provides opportunities to influence travel behaviour as new businesses move in.

- Require new employers/businesses above a certain size to join Smart Commute to continue and strengthen the effectiveness of a developer TDM program described in item 2.
- Implement a workplace focused marketing campaign to promote existing and new TDM programs and new transportation infrastructure to the business community as a benefit to their employees. Communications should target
    - New commercial developments
    - Key employment corridors receiving infrastructure upgrades
    - Smart Commute NTV employers
    - New employers moving into the city, specifically North Vaughan
- Implement workplace individualized marketing programs at key employers located close to new transit infrastructure. These programs segment the employee population to identify potential users of new infrastructure, and target promotions and incentives accordingly.

- Create economic development materials to encourage TDM friendly workplace locations and development.
- Survey work place destinations for residents moving in to explore opportunities to provide shuttle services or rideshare opportunities.

Partnerships and Resources: Chamber of Commerce, Smart Commute NTV, City of Vaughan Economic Development

Expected Impacts: Employer trip reduction programs are expected to result in a 4% to 6% reduction in commute VMT[6].

Funding Options: From April 2016 onwards, Smart Commute NTV will have access to Metrolinx funds to support more in-depth employer programming at a select number of workplaces each year. The aim is to develop pilot programs that achieve commute travel behaviour change. These workplace programs could include Individualized Marketing programs, first/last mile solutions, additional infrastructure, new technology applications and more.

[6] Impacts of Employer-Based Trip Reduction Programs and Vanpools on Passenger Vehicle Use and Greenhouse Gas Emissions, 2014.

Implementation

Coordinated Approach to Program Delivery

Blocks 27 and 41 provide an opportunity to coordinate all TDM efforts within each of the block to work together and reinforce each other. Recommendations include:

- City staff to oversee and coordinate all programs and work with Smart commute, schools, Metrolinx, development division, etc. to implement and track TDM programs, developer requirements and outcomes.
- Time TDM programming around the introduction of new services and the occupancy of new developments.

Piloting and Measuring New Programs and Approaches

In order to deliver the most effective programs that achieve behavior change, the City should test new approaches with pilot programs, measure impacts and re-evaluate pilot or permanent programs based on the results. The following steps are recommended:

- Conduct focus groups to gather preliminary feedback and gauge interest among employees and residents.
- Implement pilot programs to test and investigate innovative TDM approaches.
- Measure impacts of pilot programs, evaluate, and decide on larger scale program implementation.
- Monitor program effectiveness on an ongoing basis to inform program improvements and future programming efforts.

Partnerships

The ability to successfully influence travel behaviour through implementation of the recommendations within the North Vaughan TMP will rely heavily on the city's partnerships with external agencies, other levels of government, and businesses and residents. The city has already established many of these partnerships, but should work with these partners to facilitate the implementation of the TMP. The city should continue to build relationships, work with partners to implement and study pilot programs, analyze results, and adjust programs based community feedback and needs.

Workplace

Workplaces have a key role to play in the delivery of the TMP. The daily commute is a significant trip generator, and workplaces are well placed to encourage their staff to use alternative travel modes and associated infrastructure, such as that laid out in the TMP. The City should seek to leverage partnerships with organizations and agencies already delivering sustainable transportation programs and messaging in order to maximize the reach of the city's TDM programs. There are a number of workplace related partnerships to explore and enhance:

i) Smart Commute – North Toronto, Vaughan

In order to implement the TDM elements of the TMP at the workplace level, the city should continue to work closely with the local TMA, Smart Commute - North Toronto, Vaughan (SCNTV). SCNTV is a non-

profit TMA that operates as part of the GTHA region-wide Smart Commute network funded by Metrolinx, the local and regional municipalities and the private sector. Smart Commute NTV delivers workplace TDM programming across the north of the city of Toronto and to the whole of the city of Vaughan. SCNTV is unique in its direct connections with workplaces and their employees, conducting surveys of commuter travel behaviour and providing on-site programming. These connections to workplaces provide an excellent channel for communicating relevant elements of the TMP and identifying workplace partners that support the goals of the TMP. For example, Smart Commute workplaces may be well served by new HOV lanes or cycling infrastructure provided by the TMP. SCNTV should act as the conduit to provide messaging and promotion of this infrastructure to the workplace and deliver programming to encourage its use. SCNTV should be a key player in influencing travel behaviour change that Vaughan is seeking to achieve through the TMP.

ii) City of Vaughan Economic Development

In addition to SCNTV, Economic Development can provide useful connections to local businesses, particularly those relocating into the area. Ensuring that new businesses moving into the city are aware of the TMP and encouraging them to relocate in areas served by TDM infrastructure can help increase sustainable commuting amongst their workforce. The city should work closely with Economic Development to promote the benefits of transit and bike friendly development sites and existing commercial properties to incoming businesses.

iii) York Region Public Health

York Region Public Health works with employers to develop wide-ranging workplace wellness programs. Increasingly, these programs (and the wider work of public health agencies) focus on increasing the use of active transportation by employees, both as a commute mode or a recreational activity. Additionally, public health units are recognizing the importance of "healthy by design" workplaces and communities. The opportunities to improve public health at the workplace are greatly increased if workplaces are served by supportive infrastructure such as bike lanes, walkable streets, and public transit. The city should partner with York Region Public Health to develop workplace wellness programs that actively promote the active transportation elements of the TMP.

Community (Residential and School Travel Planning)

i) Smart Commute – Metrolinx

Currently, SCNTV is limited to only with workplaces and employers. However, the parent organization, Smart Commute at Metrolinx, has the ability to work with municipalities on more community focused TDM programs. These would primarily relate to school travel and GO Station Access. The TMP will impact both of these areas, and a partnership would offer excellent opportunities for promotion.

ii) Vaughan Cycling Forum

The Vaughan Cycling Forum is for residents and cycling enthusiasts to learn about current and future cycling initiatives in the city of Vaughan. The forum meets regularly through the year to discuss

opportunities and provide feedback on city plans. The forum would provide an excellent channel to promote the active transportation elements of the TMP and discuss initiatives for successful implementation.

iii) Healthyork – the York Region Healthy Communities Partnership

Healthyork collaborates with individuals, community partners and municipalities on initiatives that support and build healthy eating and physical activity policies for York Region residents. Healthyork is responsible for the Building Healthy Communities program, which encourages active modes of transportation including school travel planning, community walkability and bikeability and all inclusive recreation policy guidelines. This program provides an excellent opportunity to promote the active transportation elements of the TMP to the community. The Building Healthy Communities program supports active and safe routes to school planning, the Bicycle Friendly Communities program, the Walk Friendly Ontario program, and cycling advocacy in York Region as a whole. The active transportation impacts of the TMP will be of significant interest to Building Healthy Communities and its stakeholders.

iv) School Boards

School Boards are important partners for implementing school-based and community TDM. While most directly involved in approving and implementing school-based programs, the benefits of these programs tend to extend to the whole community as children and youth adopt more sustainable travel behaviours and influence their families, friends, and neighbours.