OAKVILLE

Burnhamthorpe Road Character Study & Municipal Class Environmental Assessment

ENVIRONMENTAL STUDY REPORT | DRAFT – FINAL | DECEMBER 2014

MMM GROUP dtah

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Executive Summary

MMM Group was retained by the Town of Oakville to undertake a Character Road Study to develop recommendations for the future road and streetscape design for the sections of Burnhamthorpe Road that will remain after the New North Oakville Transportation Corridor (NNOTC), to be named William Halton Parkway[1], is built by Halton Region. It should be noted that the study follows the process for a Schedule 'C' Class EA within the Municipal Engineers Association's (MEA) Municipal Class EA of October 2000, as amended in 2007 and 2011.

The location of Burnhamthorpe Road and the study corridor boundaries are illustrated in **Figure 1** below.

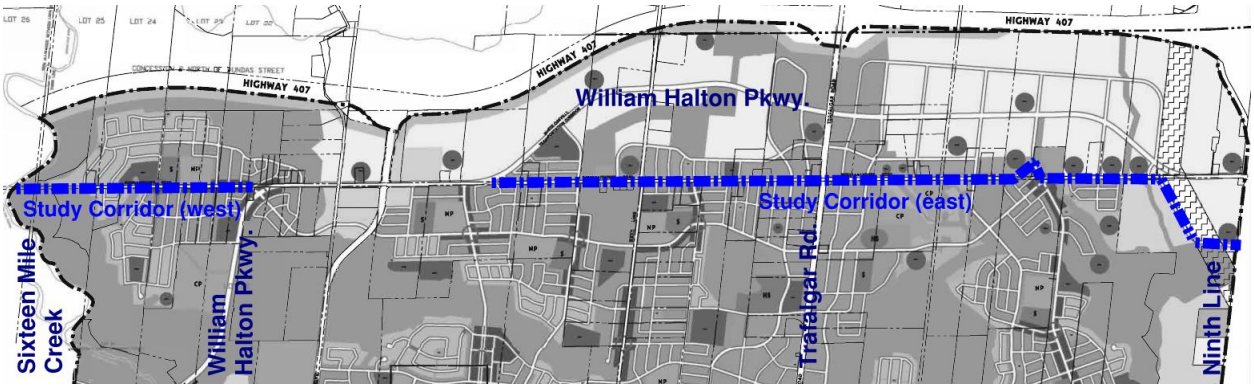


Figure 1. Burnhamthorpe Road study corridor

Study Purpose

Burnhamthorpe Road is currently designated as a regional arterial road under the jurisdiction of Halton Region. However, once completed, William Halton Parkway will parallel Burnhamthorpe Road and replace its regional road function. The remaining portions of Burnhamthorpe Road will be transferred to the town and will be designated a "Character Road" as described in the North Oakville East Secondary Plan (NOESP). This will allow Burnhamthorpe Road to transition into a vibrant and pedestrian-friendly street as development evolves along the corridor.

The purpose of the Burnhamthorpe Road Character Study and Class Environmental Assessment is to determine appropriate road and streetscape designs for the future Burnhamthorpe Road, including the required right-of-way width.

Problem/Opportunity

This study aims to determine both the *function* and *character* of Burnhamthorpe Road as it evolves by addressing the following questions:

[1] As per June 2014 Halton Regional Council decision.

Function

1. What is the role of Burnhamthorpe Road and who is going to use it?
2. Can parallel transportation facilities assume some functions?

Character

1. Will Burnhamthorpe Road be rural, urban, or both?
2. Will sections of the road be treated the same, or will the road design change along the corridor?
3. Should there be common, distinct elements along the length of the corridor?

Consultation Process

The process of developing an effective streetscape design concept for the Burnhamthorpe Road corridor required meaningful and creative public and stakeholder consultation efforts. The consultation activities were tailored to gathering input from residents, businesses and stakeholders along the corridor.

Consultation Activities included the following:

- A **Study Webpage** was created and notices, study updates, and consultation materials were made available on the webpage. Notices were also mailed to local residents and published in local newspapers.
- An electronic **Study Newsletter** was released at a key stage of the study to provide engaging materials regarding study processes, key results, and ways to get involved.
- Two **Public Information Centres (PICs)** were held at key stages to allow for interaction between the public and the Project Team and gather input from interested members of the public.
- A **Technical Agencies Group (TAC)** and **Stakeholder's Group** were established. At two stages of the study, workshops were held with each group to engage with local agencies and individuals with a vested interest in the redesign of the corridor and to provide an opportunity for discussions with members of the Project Team.

Policy Context

The NOESP was used as the main guiding document informing the outcome of the Burnhamthorpe Road Character Study. Its various objectives and land use designations are amongst the most critical factors in determining the need for particular roadway features such as sidewalks, trails, cycling lanes, and parking, as well as the most appropriate segments along the corridor for each of these features. Land use designations and corresponding densities played a critical role in determining appropriate right-of-way widths and streetscape designs along the corridor.

Corridor Specific Considerations

To inform the development of alternative road designs and the selection of a Preferred Design, an evaluation of corridor specific considerations was undertaken including assessments of current conditions, relevant plans or proposed conditions, and implications of the assessment on the development of alternative road designs. Urban design, context sensitive design, transit provisions, future traffic capacities, active transportation provisions, parking provisions, urban

forestry requirements, utility and municipal servicing requirements, and stormwater management provisions were considered.

Road Design Alternatives

Three sections of the corridor were defined to correspond with land use designations identified within the NOESP. The three sections of the corridor are as follows:

1. The **West section** is located just east of Sixteen Mile Creek and is characterized by primarily low to medium density residential land uses;
2. The central **Core section** is defined by the "Trafalgar Urban Core" land use designation, characterized by high density, mixed use development; and
3. The **Transitional sections** are located to the east and west of the Core section and are intended to accommodate a range of residential (low, medium and high density) and institutional uses subject to compatibility with adjacent uses.

The locations of the three sections are shown in **Figure 2** below.

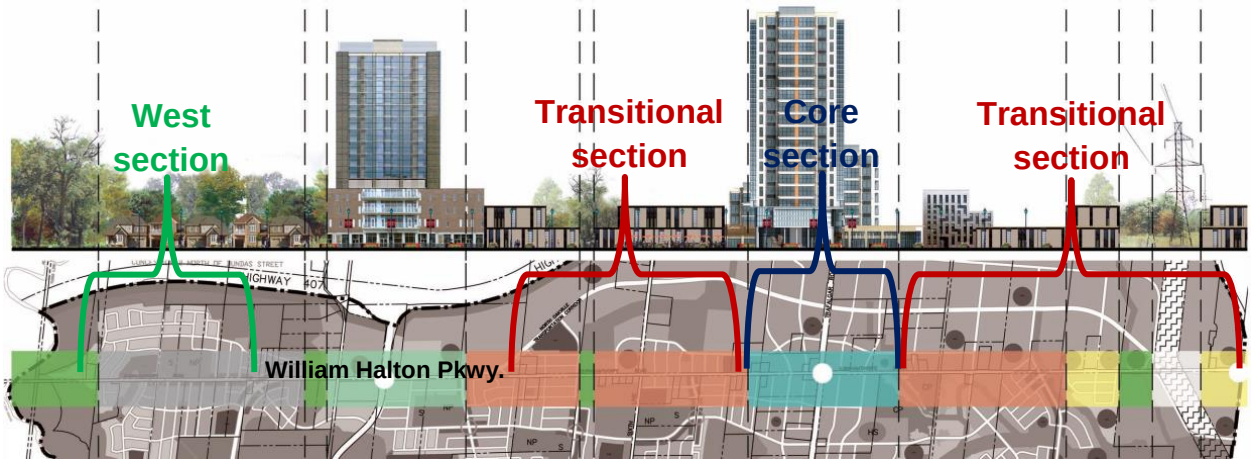


Figure 2. Burnhamthorpe Road corridor: West, Transitional, and Core sections. The West section is separated from the remainder of the corridor by a section of the future William Halton Parkway.

Three distinct sets of alternatives were developed for each of the West, Transitional, and Core sections to ensure compatibility with adjacent land uses. Each set of alternatives aimed to meet the unique needs of the area by scaling traffic lanes, on-street parking, boulevards, and cycling facilities to the NOESP's land use designations, while minimizing environmental impacts.

Evaluation of Alternatives

Through public and stakeholder input, a set of Evaluation Criteria was developed. All alternative designs that were developed for each of the three sections within the Burnhamthorpe Road corridor, and deemed to be reasonable alternatives, were assessed against these criteria to define a preliminary Preferred Design for the corridor.

In the West section, Alternative West 4 is preferred, which includes "urban" road features such as wide boulevards, on-street parking with bump outs, and buffered bike lanes. Alternative

Core 1 is preferred within the Trafalgar Urban Core, which similarly includes wide boulevards and buffered bike lanes. Alternative Transitional 2 was selected for the remaining medium-density areas, allowing a consistent buffered bike lane configuration to be carried through the entire corridor, and including bump out parking.

The overall preferred design for Burnhamthorpe Road is shown in **Figure 3** below.

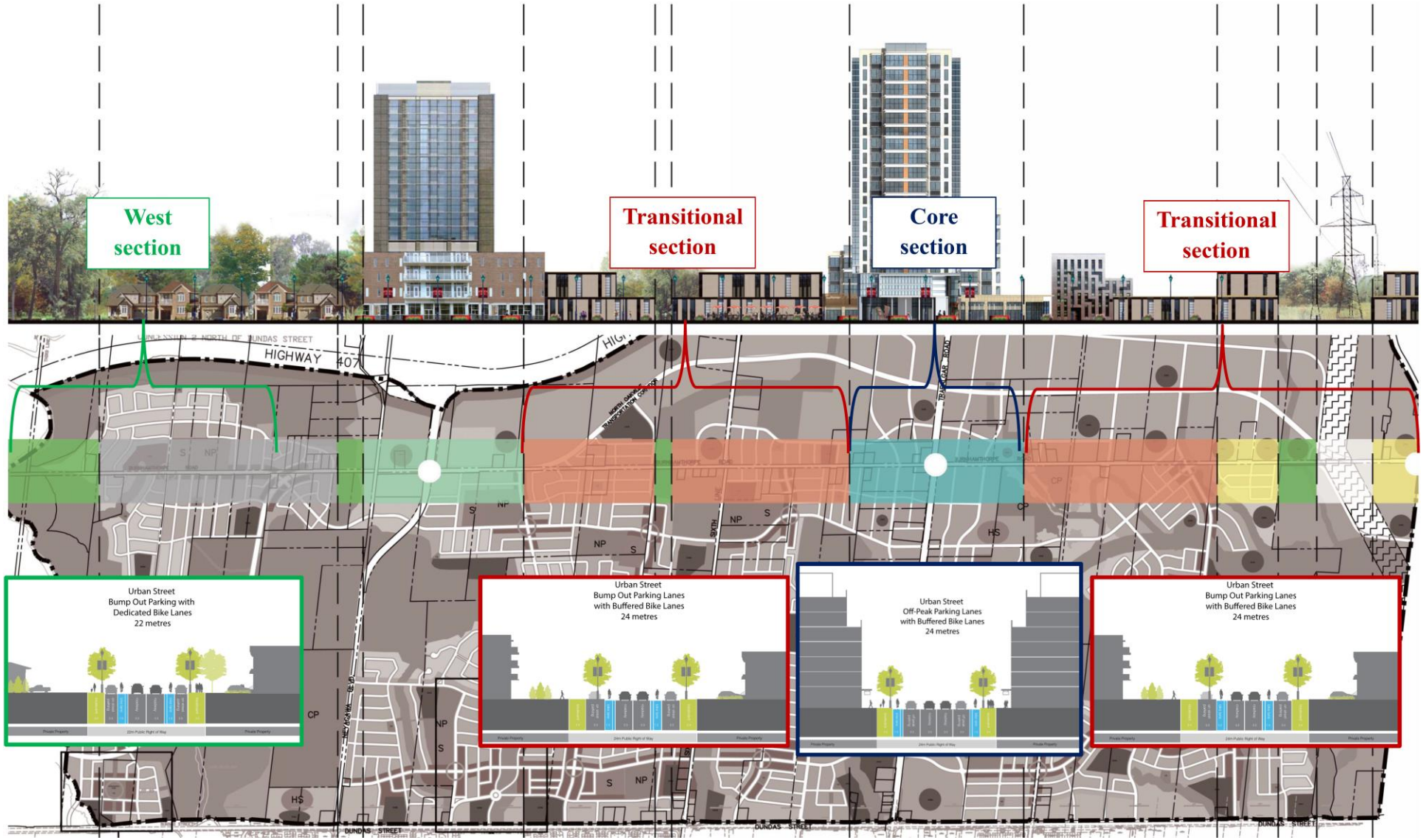


Figure 3. Preferred Design

1 Introduction and Background

MMM Group was retained by the Town of Oakville to undertake a Character Road Study to develop recommendations for the future road and streetscape design for the sections of Burnhamthorpe Road that will remain after William Halton Parkway is built by Halton Region. The location of Burnhamthorpe Road and the study corridor boundaries are described and illustrated in Section 1.2 of this report.

It should be noted that the study follows the process for a Schedule 'C' Class EA within the Municipal Engineers Association's (MEA) Municipal Class EA of October 2000, as amended in 2007 and 2011. Detailed descriptions of the MEA document and the Schedule 'C' Class EA process are provided in Section 1.5 of this report.

1.1 Study Purpose

North Oakville is poised for significant population and employment growth. To accommodate this growth a new regional road, to be named William Halton Parkway, is being built by Halton Region just north of Burnhamthorpe Road and will address future east-west travel demands in North Oakville.

Burnhamthorpe Road is currently designated as a regional arterial road under the jurisdiction of Halton Region. However, once completed, the future William Halton Parkway will replace Burnhamthorpe Road's regional road function. The remaining portions of Burnhamthorpe Road will be transferred to the town and will be designated a "Character Road" as described in the North Oakville East Secondary Plan (NOESP). This will allow Burnhamthorpe Road to transition into a vibrant and pedestrian-friendly street as development evolves along the corridor.

The purpose of the Burnhamthorpe Road Character Study and Class Environmental Assessment is to determine appropriate road and streetscape designs for the future Burnhamthorpe Road, including the required right-of-way width.

1.2 Study Area

The subject section of Burnhamthorpe Road provides an east-west link between Peel Region and Halton Region, bounded by Ninth Line to the east and Sixteen Mile Creek to the west. Some of its current features include natural heritage elements, cultural heritage resources, agricultural landscapes, rolling topography, and a rural cross-section with substandard shoulders.

The study corridor includes the two sections of Burnhamthorpe Road (east and west) that will not become a part of the approved William Halton Parkway. The study corridor is illustrated in **Figure 1-1**.

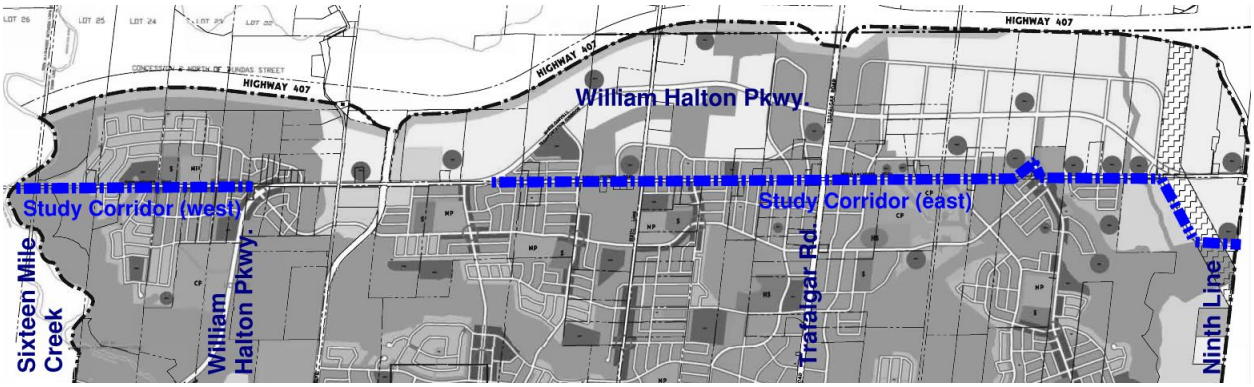


Figure 1-1. Burnhamthorpe Road study corridor overlaid onto the NOESP Master Plan.

1.3 Land Use Context

1.3.1 Current Land Use Context

Burnhamthorpe Road is currently designated as a Regional Road (RR 27) under the jurisdiction of Halton Region. Farms and rural properties line the two-lane road, along with several commercial and institutional facilities. The study corridor crosses several watercourses and natural heritage features.

Some of the existing land uses and features along Burnhamthorpe Road are shown in **Figure 1-2**.

Figure 1-2. Aerial images and photos showing existing conditions along Burnhamthorpe Road. Existing land uses include farms, rural residential properties, and institutions.

1.3.2 Future Land Use Context

The NOESP was approved by town Council in 2008. The NOESP includes the North Oakville Master Plan delineating land use designations including Urban Core Areas, a Natural Heritage and Open Space system, Employment Areas, and Transitional Areas. As the NOESP is implemented and the population of North Oakville approaches its ultimate target of 45,000 to 55,000, the landscape surrounding Burnhamthorpe Road will evolve and become increasingly diverse.

Figure 1-3 shows illustrative examples of the various land use designations adjacent to Burnhamthorpe Road in the North Oakville Master Plan. These renderings illustrate

approximate population and employment densities, building heights, and other built form characteristics that may be found along Burnhamthorpe Road as the NOESP is implemented.

The NOESP envisions Burnhamthorpe Road as a vibrant, pedestrian-friendly and transit-supportive Character Road. The Burnhamthorpe Road Character Study will support the NOESP's vision by establishing appropriate road designs for the sections of Burnhamthorpe Road between Ninth Line and Sixteen Mile Creek to serve the evolving needs of the North Oakville community. Varying cross-sections along the Burnhamthorpe Road corridor will support the proposed land uses.

The NOESP is discussed in further detail under Section 3.4.

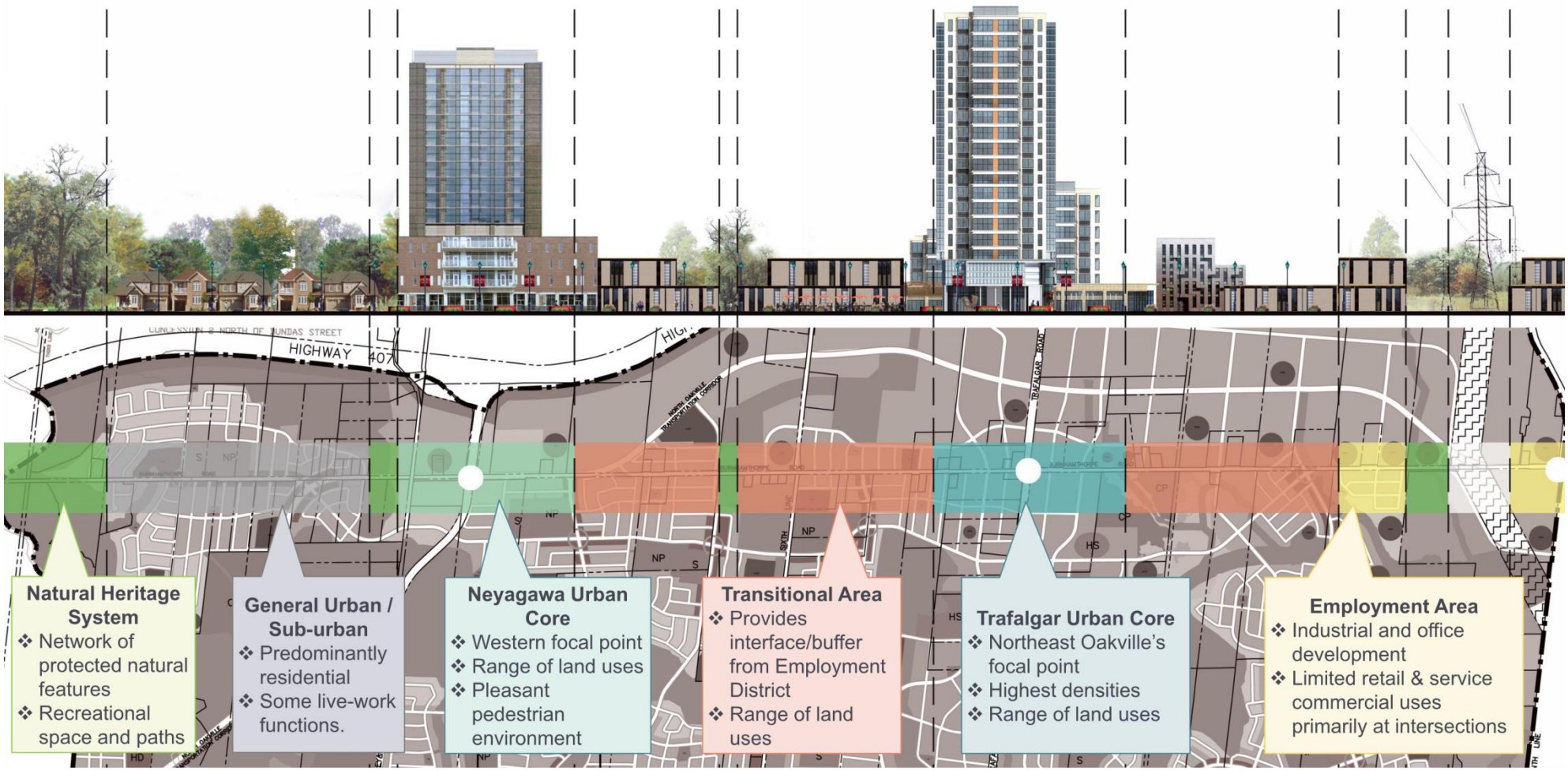


Figure 1-3. NOESP land use designations along the Burnhamthorpe Road corridor

1.4 Problem / Opportunity

Under the Municipal Class EA process, proponents are required to explore and document the problems or opportunities that necessitate a project to be undertaken.

This study aims to determine both the *function* and *character* of Burnhamthorpe Road as it evolves. The problems and opportunities detailed below relate to Burnhamthorpe Road's future function and character, and are based on a review of existing conditions as well as the Town of Oakville's vision and goals for the study corridor.

Function

As land uses and population densities along the study corridor change, the role of Burnhamthorpe Road will also change. To inform the development of appropriate road designs and right-of-way widths, the Project Team worked to define Burnhamthorpe Road's future function or role. Two questions were addressed:

1. What is the role of Burnhamthorpe Road and who is going to use it?

The future role of Burnhamthorpe Road is dependent on its users. The proportion of drivers, cyclists and pedestrians influence the appropriate road designs, including the provision of multiple traffic lanes, on-street parking, dedicated cycling lanes, or wide sidewalks.

2. Can parallel transportation facilities assume some functions?

Several east-west transportation facilities are currently located or planned to be constructed in the vicinity of Burnhamthorpe Road. Existing and planned parallel facilities are shown in Figure 1-4.

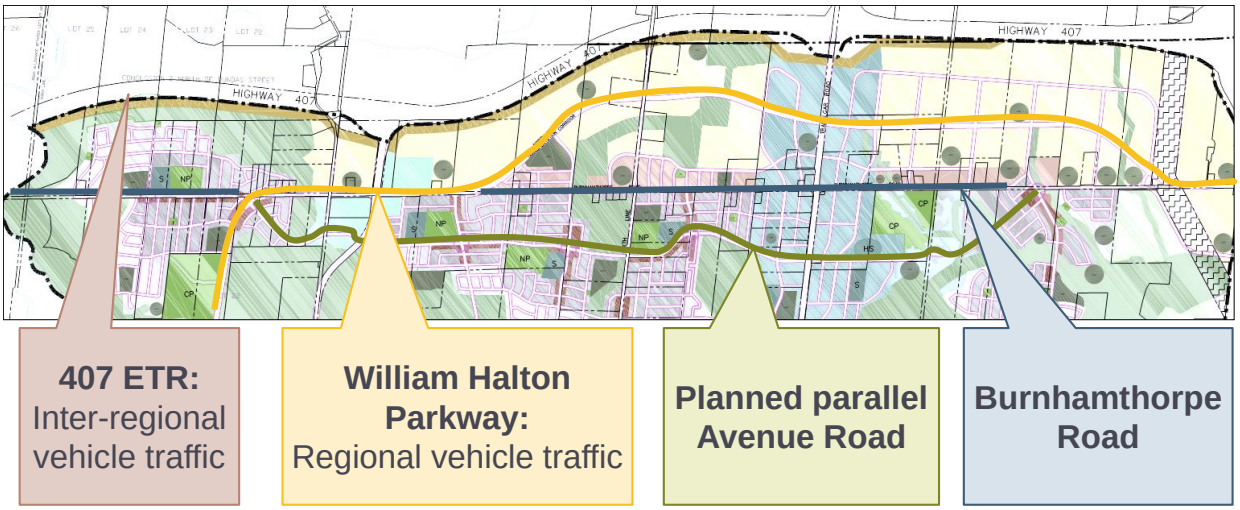


Figure 1-4. NOESP existing and planned east-west transportation facilities

Some of these facilities have defined roles and functions, which could impact the role and function of Burnhamthorpe Road: the existing 407 Express Toll Route (ETR) is a highway

intended for inter-regional vehicle traffic, while the planned four-lane arterial William Halton Parkway will carry regional east-west traffic once completed.

A planned Avenue Road, south of and parallel to Burnhamthorpe Road, is included as part of the North Oakville Master Plan. The NOESP defines the intended role of Avenue Roads as serving mainly intermediate volumes of intra-neighbourhood travel, accommodating local transit, connecting urban centres, and distributing traffic to and from arterial roads. A high level of design is encouraged on Avenue Roads including tree planting, paving, lighting and signage design.

In the context of these parallel transportation facilities, Burnhamthorpe Road will no longer be needed as a primary carrier of regional or inter-regional vehicle traffic. This study explores the extent of Burnhamthorpe Road's future role as a local traffic, transit, pedestrian, and/or cycling route.

Character

In addition to its function, this study aims to determine the desired character of Burnhamthorpe Road. Specifically, it addresses the following questions:

1. Will Burnhamthorpe Road be rural, urban, or both?

Burnhamthorpe Road is currently a rural two-lane route within a right-of-way of approximately 20 metres. As North Oakville grows and evolves, it may be appropriate for Burnhamthorpe Road to transition into an urban or sub-urban street, or to remain rural in character.

A transition into an *urban* street design would involve the addition of a greater number of roadway features such as sidewalks, cycling lanes, on-street parking and street trees, potentially requiring an increase in right-of-way width. A transition into a *sub-urban* street design would include minimal additional features, such as sidewalks only, and a minimal increase in right-of-way width. The study also addressed whether maintaining a rural street design without the addition of any roadway features is appropriate.

2. Will sections of the road be treated the same, or will the road change along the corridor?

This study also explored whether a single roadway design for the entire study corridor is appropriate, or whether multiple designs are preferred along the length of the corridor to ensure compatibility with adjacent built form. It was recognized that it may be most appropriate to include certain roadway features only within select sections of Burnhamthorpe Road. For example, as Burnhamthorpe Road enters dense urban areas, sidewalks may widen, street furniture and vegetation may become more prevalent, and the number of traffic lanes may increase. In lower-density or primarily residential areas, the suitability of maintaining a rural two-lane configuration was explored.

3. Should there be a common, distinct element along the length of the corridor?

Some road designs use common elements to create a sense of identity and character along a corridor. Distinctive vegetation, signage, street furniture, lighting, or public art unique to

Burnhamthorpe Road may be used, if desired, to improve aesthetics and present a unique and distinct Burnhamthorpe Road.

1.5 Ontario's Environmental Assessment Act

Ontario's *Environmental Assessment Act* (EA Act) requires that any complex, large-scale public sector project undergo an Environmental Assessment (EA). The objective of an EA is to identify and manage a project's potential impacts early in the decision-making process, and to ensure that a preferred alternative is selected that minimizes adverse environmental effects while meeting the objectives of the project.

The EA Act sets out two types of planning and approval processes: the Individual EA process and the Class EA process. This study follows the Class EA planning process, which applies to similar projects with predictable and manageable environmental effects. A Class EA parent document, approved by the Minister of the Environment, establishes a standard self-assessment process for eligible projects. There are currently 11 parent Class EAs in Ontario covering a range of project types including municipal roads, water and wastewater infrastructure, provincial transportation facilities, and other activities.

1.5.1 The Municipal Class Environmental Assessment

Municipal road projects are included in the Municipal Class Environmental Assessment (MCEA) parent document, prepared by the Municipal Engineers Association (2000, as amended in 2007 and 2011). The MCEA parent process provides a standard process for municipal infrastructure projects that are recurring, similar in nature, generally limited in scale, predictable in their range of environmental effects, and responsive to mitigation measures.

This study is being carried out under Schedule 'C' of the MCEA. The Schedule 'C' MCEA process includes five phases of assessment which are outlined in **Figure 1-5**, with opportunities for public input throughout. Key tasks of each phase are identified in **Figure 1-6**.

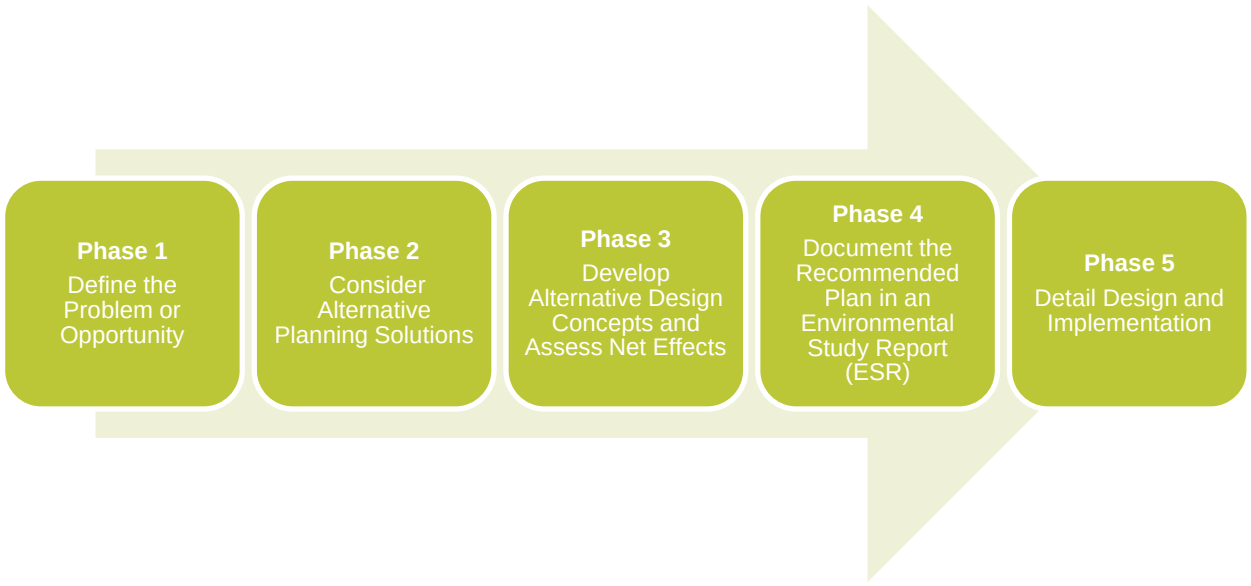


Figure 1-5. Phases in the Municipal Class EA process

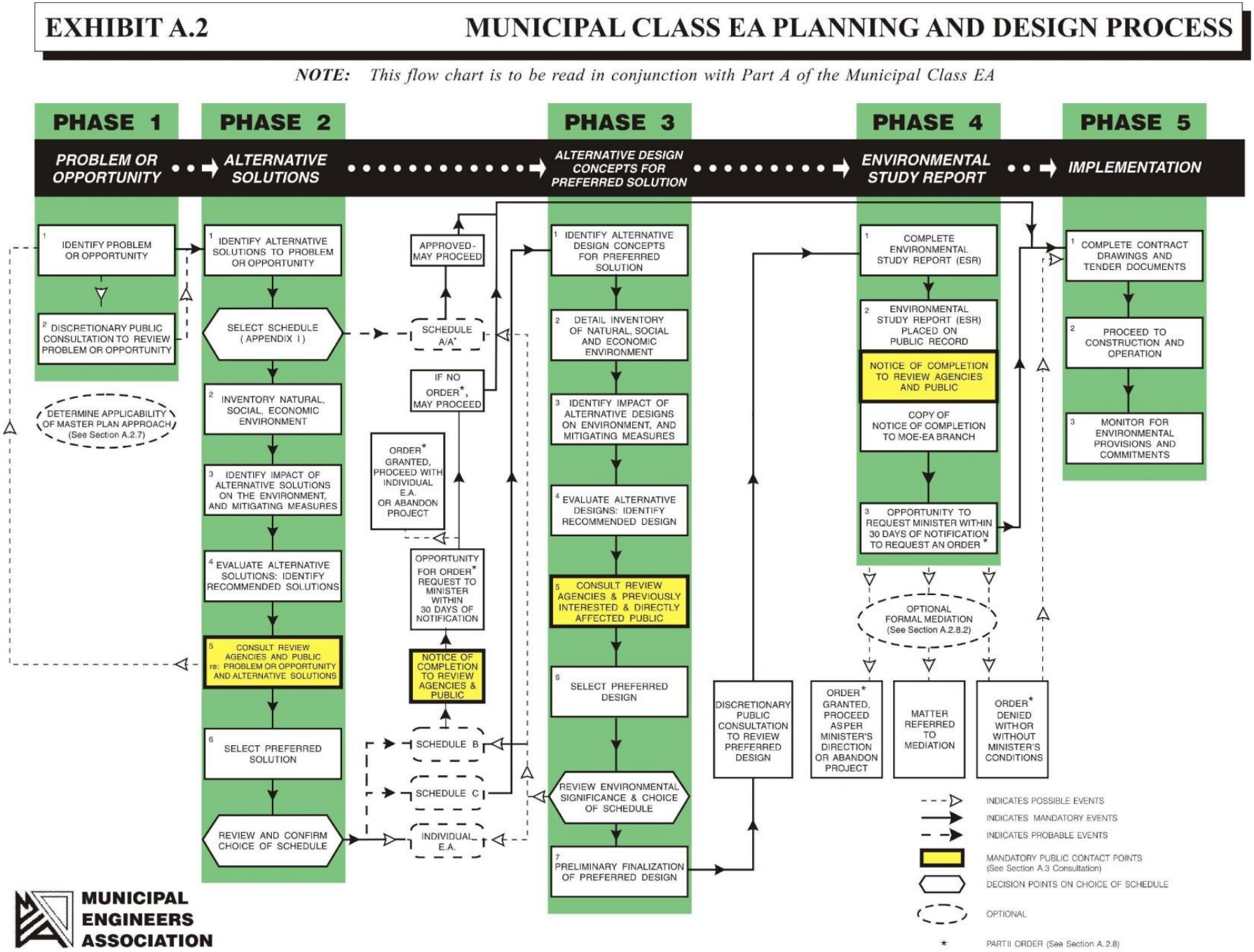


Figure 1-6. MCEA planning and design process. Public consultation forums are highlighted in yellow.

1.5.2 Part II Orders

Part II of the EA Act allows an interested person or agency to ask for a higher level of assessment for a Class EA project if they believe that a preferred alternative has been selected without sufficient study. Any individual or agency has the right to make Part II Order request to "bump-up" any Class EA to an Individual EA by submitting specific reasons for the request in writing.

The Minister of the Environment, or designate, is responsible for reviewing any Part II Order requests and may address the request in one of four ways:

1. Accept the request, which "bumps up" the Class EA to an Individual EA and requires the proponent to undertake a much more detailed and project-specific study;
2. Deny the request;
3. Deny the request with conditions such as further stakeholder consultation, a review of the identified environmental effects, or development of new mitigation measures; or
4. Refer the request to mediation for resolution.

1.5.3 The Environmental Study Report

This Environmental Study Report (ESR) was prepared in accordance with Phase 4 of the MCEA, which applies to Schedule 'C' projects. Phase 4 of the MCEA requires that activities carried out in Phases 1, 2 and 3 be documented. The ESR must include:

- Background information, including a description of the problem or opportunity;
- The rationale behind the selection of a preferred solution to the problem and the preferred design;
- An assessment of environmental considerations and potential impacts of the project;
- Proposed mitigation measures to be used to minimize environmental impacts;
- A description of the consultation process undertaken; and
- A description of the monitoring program to be employed during construction and operation.

The completed ESR must be filed with the Municipal Clerk and a Notice of Completion must be issued to notify the public and review agencies. The ESR must then be made available for public review for a minimum of 30 calendar days. Any member of the public or review agency may make a Part II Order request during this 30-day timeframe. If no Part II Order requests are received within the review period, the proponent may proceed to the Implementation phase of the project (Phase 5).

2 Consultation Process

The process of developing an effective streetscape design concept for the Burnhamthorpe Road corridor required meaningful and creative public and stakeholder consultation efforts. The consultation activities, which built upon the public and stakeholder consultation activities which were undertaken as part of the NOESP, were tailored to gather input from residents, businesses and stakeholders along the corridor.

Consultation activities for the Burnhamthorpe Road Character Study are described in the following sections. Each consultation technique was structured to engage specific target audiences and each had a unique purpose: to create awareness, gather information, identify issues, generate ideas, or establish community support.

2.1 Public Awareness Campaign

A Public Awareness Campaign was conducted to notify the public and local stakeholders of the study, identify key stages and deliverables in the study process, announce consultation opportunities, and provide contact information.

A Study Webpage was created (http://www.oakville.ca/residents/eas-burnhamthorpe.html) at the outset of the study. The Notice of Study Commencement and Notice of Public Information Centre along with study updates and consultation materials, were uploaded to the webpage at the appropriate times. The notices were also mailed to local residents and published in local newspapers.

An electronic Study Newsletter was released after the first Public Information Centre in fall 2013 to provide engaging materials regarding study process, key results to date, and ways to get involved.

The notices and newsletter are provided in **Appendix A**.

2.2 Public Information Centres

The study included two Public Information Centres (PICs), held at key stages of the process, to allow for interaction between the public and the Project Team. The first PIC was held at the outset of the study on June 25, 2013; the second PIC was held during Phase 3 of the EA process on April 30, 2014. Varied consultation techniques were employed at each of the PICs to gather input from interested members of the public.

The Project Team ensured that notices of PIC were published well in advance of each event, and participation and attendance was encouraged. Display boards from the PICs were placed on the Study Webpage to give those unable to attend an opportunity to review the materials.

A detailed consultation summary, including PIC materials, comments received and the Project Team's responses, is included in **Appendix A**.

2.2.1 PIC #1

The first PIC was held on June 25, 2013 at Sixteen Mile Creek Community Centre. At the PIC, participants were given the opportunity to learn about the study and give preliminary input. Information was presented on a series of display boards and members of the Project Team were available to gather input and answer questions. Significant interest in the study was apparent, with 35 participants in attendance.



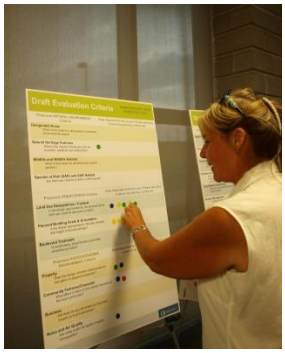


Figure 2-1. Participants at PIC #1

Several methods were used to obtain input from participants at the first PIC, including the following:

1. **Comment Cards** were provided for written comments. Participants were asked to submit their comment cards into a comment box.
2. To record spoken comments, Project Team members at the PIC used a **Note-Taking Form**. The Form included questions and topics to gain input on, including roadway features, key issues along the corridor, and the draft evaluation criteria for alternative road designs.
3. A large aerial map of the Study Corridor, overlaid with the conceptual road network of the North Oakville Master Plan, was provided on a table. Markers and sticky notes were also provided. Participants were asked to mark the "**Graffiti Board**" with any comments, particularly regarded key issues in specific areas along the corridor and areas where a certain roadway feature would be suitable.
4. A set of Draft Evaluation Criteria, to be used in the evaluation of road design alternatives, was provided on display boards for public review and comment through a "**Dot-mocracy**" exercise. Draft Evaluation Criteria were organized into six categories: Operational, Natural Environment, Urban Design, Socio-economic Environment, Cultural Environment, and Financial. PIC participants were each provided with four numbered "dot" stickers. Participants were asked to use the stickers to indicate which criteria they felt should be considered of highest priority, with "1" being highest and "4" being lowest.

This preliminary input was used by the Project Team to inform the development of design alternatives for Burnhamthorpe Road and the evaluation of alternatives.

2.2.2 PIC #2

The study's second and final PIC was held on April 30, 2014 at Town Hall. The second PIC presented work to date on the development of alternative designs, the evaluation process, results of the evaluation process and the Preliminary Preferred Design. A formal presentation was delivered and Project Team members were available to discuss the work and answer any

questions. The Preliminary Preferred Alternative was presented on display boards, which included renderings of what different sections of the corridor could look like as the NOESP and new Burnhamthorpe Road design are implemented, as well as technical drawings of the Preliminary Preferred Design.

A total of 25 participants attended the PIC and a high level of interest in the project was apparent. Participants generally viewed the work to date and the Preliminary Preferred Design positively. Participants were encouraged to submit written comments on the Preliminary Preferred Design; however, no written comments were received by the Project Team at the second PIC.

2.3 Technical Agencies and Stakeholder's Group

A Technical Agencies Group (TAC) and Stakeholder's Group were established during the initial stages of the study. Workshops were held to engage with local agencies, interest groups and specific stakeholders with a vested interest in the redesign of the corridor and to provide them with an opportunity to provide their input and have one-on-one discussions with members of the Project Team.

The role of the TAC was to provide specialized expertise to the Project Team, representing their agency in identifying planning and design issues in the study, communicating study information within their agency and providing feedback on information and ideas presented by the Project Team. TAC participants included representatives of the following municipal departments and agencies:

- Town of Oakville, Engineering & Construction;
- Town of Oakville, Planning Services;
- Town of Oakville, Parks & Open Space;
- Town of Oakville, Development Engineering;
- Town of Oakville, Communications;
- Town of Oakville, Environmental Policy;
- Town of Oakville, Chamber of Commerce;
- Oakville Transit;
- Oakville Hydro;
- Halton Region, Transportation Services;
- Halton Region, Health;
- Halton Region, Planning;
- Halton District School Board;
- Conservation Halton;
- Ontario Ministry of Natural Resources;
- Rogers Communications;
- Bell Canada;
- Enbridge Gas; and
- Infrastructure Ontario.

The Stakeholder's Group represented the interests of diverse groups within the local community. The role of its members was to help the Project Team develop an understanding of unique community values, issues and concerns. Members of the Stakeholder's Group were representative of the following groups:

- Oakville Cycling Club;
- Oakville Green;
- King's Christian Collegiate;
- Ren's Pet Depot;
- Markay Homes; and
- Local property owners.

Two workshops were held with each of the TAC and Stakeholder's Group at different points during the study. The purpose of the first workshops, held on August 29, 2013, was to keep the TAC and Stakeholder's Group informed of work to date, gather ideas of the future role of Burnhamthorpe Road as a Character Road, and gain input on the initial set of Draft Evaluation Criteria. The second workshops were held on November 20, 2013 and focused on the evaluation of alternatives and selection of a Preliminary Preferred Design.

A more detailed summary of the TAC and Stakeholder's Group workshops is provided in **Appendix A**.

3 Policy Context

Extensive studies and policies have been prepared to inform the development of North Oakville, including the following documents:

- Town of Oakville Official Plan: *Livable Oakville* (2009);
- Town of Oakville Transportation Master Plan (2012);
- Town of Oakville Active Transportation Master Plan (2009);
- North Oakville East Secondary Plan (2008);
- North Oakville Implementation Tools (2009);
- North Oakville Transportation Corridor and Sixteen Mile Crossing Class EA (2010); and
- North Oakville Creek Sub-watershed Study (2006).

A review of this existing material was carried out during the initial stages of the Burnhamthorpe Road Character Study to ensure that it was grounded in a thorough understanding of the local history and context of the study corridor and surrounding neighbourhoods. An overview of each document and its relevance to the Burnhamthorpe Road study corridor is provided below.

3.1 Town of Oakville Official Plan: Livable Oakville

Livable Oakville, the town's Official Plan (OP), was approved by the Ontario Municipal Board (OMB) on May 10, 2011 and replaced the policies contained in the 1984 Town of Oakville OP. Livable Oakville directs growth to identified growth areas while protecting the town's stable residential neighbourhoods, green spaces and employment lands to 2031.

Livable Oakville applies to the lands south of Dundas Street and north of Highway 407, and therefore its policies do not directly impact the Burnhamthorpe Road study corridor. However, Livable Oakville's overall vision, as communicated in its Mission Statement and Guiding Principles, was considered during the study.

Its Mission Statement is: *"To enhance the Town's natural, cultural, social and economic environments by ensuring that environmental sustainability, cultural vibrancy, economic prosperity and social well-being are incorporated into growth and development decisions."*

The document articulates the following Guiding Principles:

- Preserving and creating a livable community;
- Providing choice throughout the town; and
- Achieving sustainability.

3.2 Town of Oakville Transportation Master Plan

"Switching Gears: Oakville's Transportation Master Plan" was released in February 2013. The Transportation Master Plan (TMP) is a guide for the town's transportation system to a horizon year of 2031. The recommended plan incorporates six major elements:

1. Integrated land use and transportation planning;
2. Implementation of travel demand management strategies;
3. Additional and improved cycling and pedestrian facilities;
4. Expansion of local transit service and introduction of transit priority measures;

5. Road network capacity improvements; and,
6. Development of sustainable urban design standards.

The TMP outlines town-wide transportation initiatives to be implemented over the next two decades. The only roadway within the Study Area that is affected is Sixth Line between Dundas Street and the future William Halton Parkway; Sixth Line is to be widened from four lanes to six. Otherwise, there are no TMP recommended improvements within the Burnhamthorpe Road study corridor.

3.3 Town of Oakville Active Transportation Master Plan

Oakville's Active Transportation Master Plan (ATMP) was completed in September 2009. The ATMP lays out a plan consisting of short, medium and long-term actions and recommendations to establish and support cycling and walking for Oakville's residents. The ATMP is based on a vision that ensures that every street in the town encourages active transportation for both utilitarian and recreational travel.

The ATMP developed a recommended network of on-road and off-road facilities to meet the needs of a broad range of users. The active transportation network was developed using a grid of north-south and east-west links supplemented with off-road trails where feasible. The recommended network is based on a hierarchy of primary "Spines" and secondary "Neighbourhood" connections. The Network Hierarchy shown in the ATMP Final Report indicates that the entire east section of Burnhamthorpe Road is a primary road and the west section is a secondary route.

The ATMP identified the provision of on-road bike lanes for the east section of Burnhamthorpe Road and a signed bike route for a short section of the west end of Burnhamthorpe Road west of the William Halton Parkway connection. There are also three north-south trails along watercourse / open space corridors within the east section of Burnhamthorpe Road:

- West of Sixth Line
- East of Trafalgar Road
- West of Ninth Line

The ATMP also recommends that sidewalks be placed on both sides of Burnhamthorpe Road in both the east and west sections of the study area. The Burnhamthorpe Road Character Study considered these recommendations.

3.4 North Oakville East Secondary Plan

The North Oakville East Secondary Plan (NOESP) was approved in 2008 as Town of Oakville Official Plan Amendment 272. It applies to the lands bounded by Highway 407 and the town boundary to the north, Ninth Line to the east, Dundas Street to the south, and the centre line of Sixteen Mile Creek to the west. A map showing the context of the study area is provided in **Figure 3-1**.

The purpose of the NOESP is to establish a detailed planning framework for the future urban development of the North Oakville East Planning Area. It is intended for the planning period to 2021 and will be reviewed at least every five years.

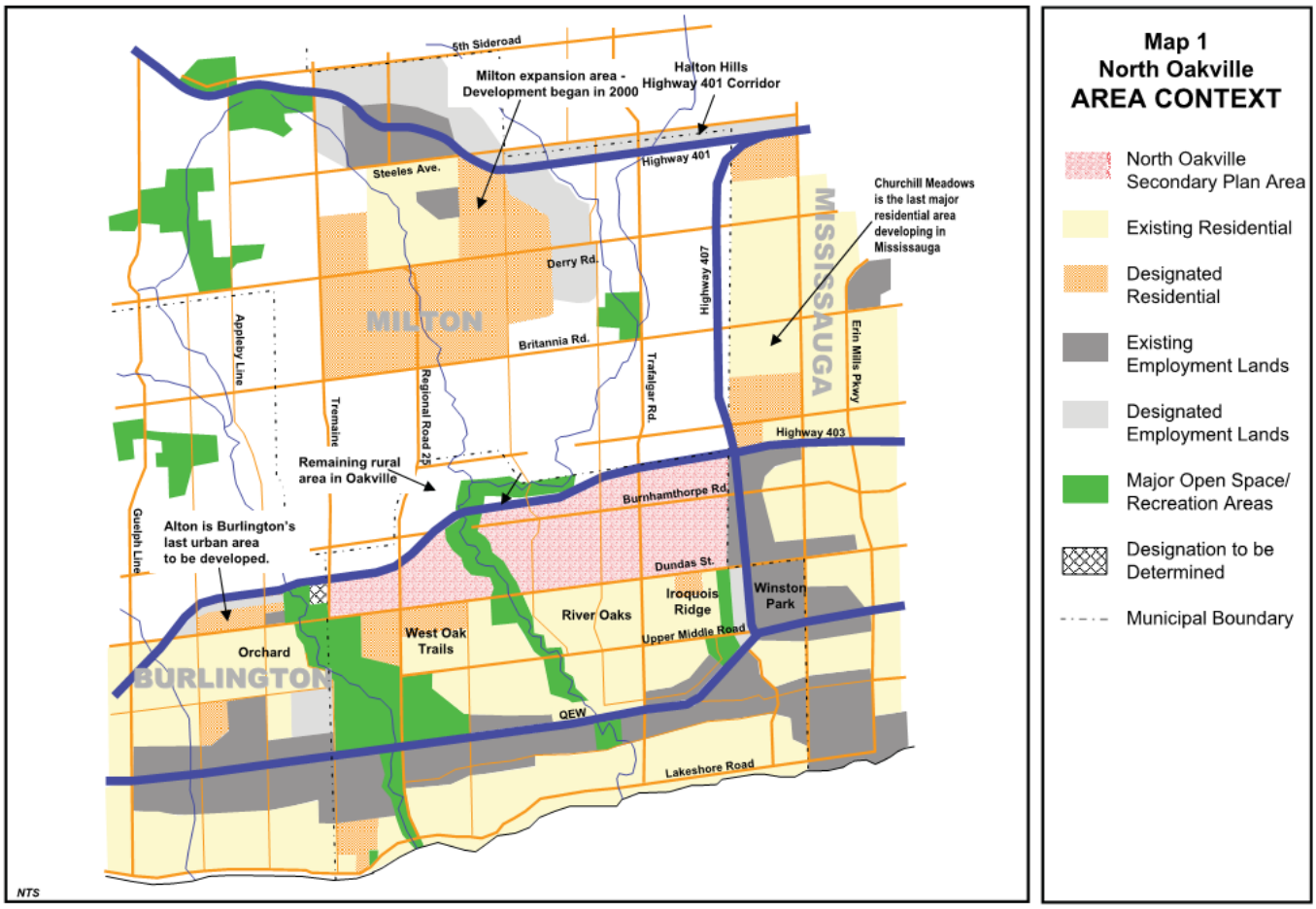


Figure 3-1. NOESP area context

The Project Team ensured that the Burnhamthorpe Road Character Study reflects the many aspects of the NOESP's vision and objectives. The vision and objectives emphasize maintaining Oakville's natural and cultural heritage, achieving a compact and pedestrian-oriented urban community, and becoming a model of smart growth. The "transect" planning model is encouraged to sustain a complete palette of neighbourhoods, from rural to urban.

The NOESP sets a population target of 45,000 to 55,000 in North East Oakville with average densities at or above 30 units per hectare. The NOESP allocates this growth within a range of land use designations, as shown Figure 3-2. As discussed previously, the Burnhamthorpe Road study corridor traverses a number of distinct land use designations including Natural Heritage System, General Urban Area, Sub Urban Area, Neyagawa Urban Core, Transitional Area, Trafalgar Urban Core, and Employment Area (Figure 1-3). Each of these land use designations has unique implications for the future Burnhamthorpe Road.

Finally, the North Oakville Secondary Plan OMB settlement presented a set of requirements that were considered in the Burnhamthorpe Road Character Study, as follows:

- Direct access from abutting properties will be permitted as it applies to existing uses;

- Direct access for new uses may be permitted with some restrictions in specific locations related to specific forms of development or the use of alternative designs;
- Two travel lanes are preferred, but the exact number of lanes, including provision for on-street parking in the Trafalgar Urban Core Area, will relate to the nature of the adjacent land uses and traffic volumes. The number of lanes may be variable and will be determined as part of the design study; and,
- Right-of-ways will be kept to the minimum and shall not exceed a maximum of 24 metres and more typically will be 20 metres. However, the right-of-way dimensions may need to be variable depending on the road design and area.

The NOESP was used as the main guiding document informing the outcome of the Burnhamthorpe Road Character Study. Its various land use designations traversed by the study corridor are one of the most important indicators in determining the need for particular roadway features such as sidewalks, trails, cycling lanes, and parking, as well as the most appropriate segments along the corridor for each of these features. Land use designations and corresponding densities played a critical role in determining appropriate right-of-way widths along the corridor.

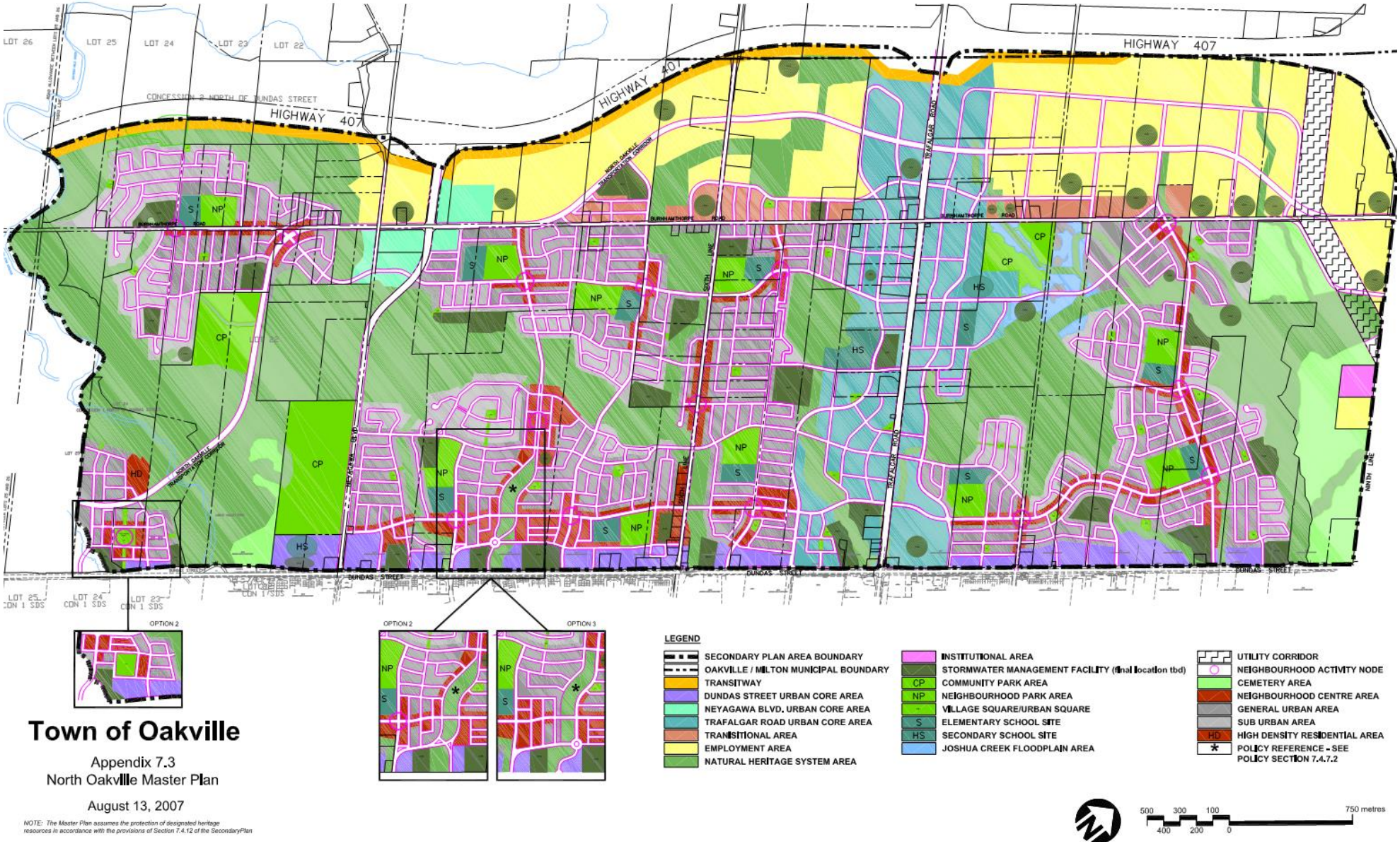


Figure 3-2. NOESP Master Plan

3.5 North Oakville Implementation Tools

A set of tools has been created to facilitate implementation of the North Oakville East and West Secondary Plans. These tools take the form of documents summarized in the following sections.

3.5.1 North Oakville Zoning By-law

The North Oakville Zoning By-law (2011) designates specific land use zones across North Oakville to implement the North Oakville East and West Secondary Plans. While the Secondary Plans present an overall vision and objectives for North Oakville, the Zoning By-law regulates specific land uses and built form characteristics such as building heights, setbacks, and floor space index.

While the Burnhamthorpe Road Character Study primarily used the NOESP for direction on the future land use context of the corridor, the North Oakville Zoning By-law was used where more detailed information regarding land use and built form characteristics was required. Building heights, setbacks and densities played a role in determining the appropriate roadway features and right-of-way widths in sections along the study corridor to accommodate vehicular and pedestrian demand.

3.5.2 North Oakville Transit Plan

The North Oakville Secondary Plan Transit Plan (2009) emphasizes a "Transit-First" approach to planning in Oakville, using Transit-Oriented Development Principles. It identifies the proposed location and infrastructure needs of Inter-regional Transit Corridors, Primary Transit Corridors, Secondary Transit Corridors, and Planned/Proposed Community Services.

The Transit Plan identifies Burnhamthorpe Road primarily as accommodating Planned/Proposed Community Service with 15- to 30-minute headways. As it will not be a Primary Transit Corridor, dedicated transit-related infrastructure is likely not required. Some shorter sections of Burnhamthorpe Road may be used for Secondary Transit Corridor service with shorter headways of 7 to 10 minutes. In these potential sections, the Transit Plan recommends transit priority measures such as reserved bus lanes and signal priority, where appropriate.

The Transit Plan was used in conjunction with Oakville's Transportation Master Plan to determine Burnhamthorpe Road's transit priority needs.

3.5.3 North Oakville East Parks Facilities Distribution Plan

The North Oakville East Parks Facilities Distribution Plan (2009) guides the location, configuration, design and development of the parks system for the NOESP. It supplements, but does not supersede the intent of the NOESP's proposed parkland system and was used in conjunction with the NOESP where further detail was required regarding the characteristics of the planned parklands surrounding the study corridor.

3.5.4 North Oakville Urban Design and Open Space Guidelines

The natural beauty of the North Oakville lands and their location provides an opportunity for the Town of Oakville to create a new progressive community that is closely linked to its natural and cultural heritage. The North Oakville Urban Design and Open Space Guidelines (2009) establish the physical design concepts that will lead to the development of a high quality, sustainable and integrated employment and residential community, one that is supported by a sustainable street transportation network. The guideline document implements the broad policies and directions of the North Oakville Secondary Plans.

The guideline document describes the function and character for all streets in the North Oakville Secondary Plan area. Several cross sections are included for Burnhamthorpe Road in both the urban and rural segments. The recommended street designs respond to future built form and land use assignments and character areas—be they urban or rural. Within the public right-of-way, the recommended street designs accommodate a generous pedestrian environment, with through traffic lanes and on-street parking in the urban condition. The guidelines mention cycling infrastructure but do not indicate the type or arrangement of cycling facilities within the public right-of-way. Several rights-of-way widths are demonstrated in the guidelines, ranging from 19 metres to 24 metres. Additional setbacks may be required for private development sites.

The guidelines provide clear high-level direction for the design character of Burnhamthorpe Road, noting that the corridor should vary between rural and urban. The guidelines are less clear about function and the placement of some or all design elements within the public right-of-way.

3.5.5 North Oakville Parking Strategy – Phase A

The North Oakville Parking Strategy – Phase A: Parking Management Principles & On-Street Parking Policies (2009) addresses the provision of both public and private parking resources for North Oakville and presents a strategy for on-street parking, particularly in residential areas. The future Phase B of the study will develop a detailed implementation and funding plan for the provision of municipal parking facilities based upon the approved parking management principles and on-street parking policies.

The Parking Strategy recommends the following provisions for on-street parking:

- *On-street parking should be provided in the neighbourhood centres primarily for short term visitor use with some potential for modest allocation to resident and employee parking on side and rear streets in order to maximize public parking use.*
- *In the Urban Core areas, the primary emphasis should be on providing short term parking for visitors with the potential for limited permit sales to employees and residents.*

The Parking Strategy is relevant to the Burnhamthorpe Road Character Study primarily in its provisions for on-street parking. The document states that virtually all streets in North Oakville will be capable of providing on-street parking on at least one side. It presents characteristics of

on-street parking to be achieved in four “character areas” which correspond to the NOESP planned land use designations of Urban Core Areas, Neighbourhood Centres, General Urban and Sub Urban Neighbourhoods, and Employment Areas. These recommendations were considered and incorporated where appropriate.

3.5.6 North Oakville Urban Forest Strategic Management Plan

The North Oakville Urban Forest Strategic Management Plan (2012) provides high-level strategy and planning recommendations for achieving a sustainable, healthy urban forest. It was completed to support Oakville’s long-term overall vision of 40% tree canopy cover. It includes an inventory of the existing urban forest and canopy cover, and identified land areas that are critical to achieving the targeted urban forest cover. It also makes soil volume, compaction, and tree species recommendations to optimize the growth and health of urban trees. This information was used over the course of the Burnhamthorpe Road Character Study to help achieve Oakville’s urban forest vision. Maintenance of existing trees, as well as new tree plantings, along the Burnhamthorpe Road corridor is a priority.

3.5.7 North Oakville Trails Plan

The North Oakville Trails Plan (2013) serves as a guide to the planning, development and management of a sustainable trail network which embraces the diversity of users and user groups, and supports social, cultural, health, economic and environmental benefits for North Oakville’s communities. It works with the North Oakville East Transit Plan and the North Oakville East Urban Design Guidelines to form the basis of an active transportation strategy for North Oakville. It identifies roads where bicycle lanes, major trails, minor trails, multi-use trails, regional bicycle facilities, and signed bike routes are planned.

The eastern section of the Burnhamthorpe Road study corridor is identified as a corridor where a bicycle facility is to be determined. The Burnhamthorpe Road Character Study worked to determine whether cycling facilities are appropriate along this section of the corridor and which type of facilities are preferred.

Along the western section of the study corridor, a major trail is preferred. The Trails Plan identifies major trails as off-road, soft surface pathways used primarily by pedestrians, although cycling is not restricted. Major trails typically occur in open space areas and provide critical north-south connections along valley and channel features along with primary east-west links along the Natural Heritage System. Further details are provided regarding preferred width, materials, slope, and accessibility provisions. The suitability of these provisions was considered through the Burnhamthorpe Road Character Study process.

3.5.8 Sustainable Development Checklist & User Guide

The Sustainable Development Checklist (2008) is intended as a tool for assessing the sustainable features of development applications in North Oakville. It is based on North Oakville Secondary plan policies and is meant to encourage sustainable development practices. The Checklist is not directly relevant to the Burnhamthorpe Road Character Study, as it concerns development applications only. However, many of its principles were considered,

including short block lengths, emphasis on high quality public spaces, continuous sidewalks, high-efficiency street lighting, and “Green Streets”, among others.

3.5.9 North Oakville Environmental Implementation Report and Functional Servicing Study Terms of Reference

The North Oakville Environmental Implementation Report and Functional Servicing Study Terms of Reference (2013) set out study requirements and obligations for works installed in North Oakville. This document applies only to development applications and does not have direct relevance to the Burnhamthorpe Road Character Study.

3.5.10 North Oakville Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies

The North Oakville Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies (2009) provides proponents of land development in North Oakville with a set of parameters for the preparation of such studies. This document is intended for use in development applications processes and is not directly relevant to the Burnhamthorpe Road Character Study.

3.6 North Oakville Transportation Corridor and Sixteen Mile Creek Crossing EA

The North Oakville Transportation Corridor and Crossing of Sixteen Mile Creek Class Environmental Assessment Study (NNOTC EA) was undertaken by the Regional Municipality of Halton to identify existing and future transportation issues in the North Oakville area. The NNOTC EA followed the Schedule “C” Class Environmental Assessment process culminating in an Environmental Study Report. The study limits extended from Bronte Road (Regional Road 25) easterly to Ninth Line (Regional Road 13).

The recommended design for the NNOTC, to be named the William Halton Parkway, included a basic four lane arterial roadway within a 35m road allowance, with turning lanes at major intersections. The design also includes provisions for on-road bike lanes and a 3.0m wide multi-use path on both sides of the Corridor. A new structure is proposed to span Sixteen Mile Creek.

The recommended alignment for William Halton Parkway connects directly to the subject section of Burnhamthorpe Road west of Ninth Line (as shown in Figure 1-4). As well, William Halton Parkway’s alignment is centred on the existing Burnhamthorpe Road road allowance east and west of Neyagawa Boulevard.

The NNOTC EA Study defines the characteristics with respect to active transportation and vehicular accommodations on the new arterial roadway. Therefore, existing Burnhamthorpe Road can provide other complementary characteristics.

Sections of Burnhamthorpe Road that are not part of William Halton Parkway will be transferred to the Town of Oakville in a reasonable state of repair representing existing conditions, subject to future legal agreements between the town and Halton Region. In the interim, the Region will continue to maintain existing Burnhamthorpe Road and if development proceeds adjacent to the

corridor prior to transfer, the Region will require dedication of the regional right of way as per the Regional Official Plan or as identified in this ESR.

3.7 North Oakville Creek Sub-watershed Study

The North Oakville Creek Subwatershed Study (NOCSS) was prepared to plan for future urban development in the North Oakville Development Area (north of Dundas Street), in the Town of Oakville. The North Oakville Development Area is bounded by Dundas Street to the south, Highway 407 to the north, Ninth Line to the east and Tremaine Road to the west. The NOCSS was prepared in support of the Secondary Plan and provides a management framework in determining policies for future development within the watershed. Its purpose was to develop a subwatershed plan that allows sustainable development while simultaneously ensuring benefits to both natural and human environments on a watershed basis. The Town of Oakville, Conservation Halton, Region of Halton, and the Ministry of Natural Resources actively participated in the subwatershed study.

The Burnhamthorpe Road Character Study includes the section of Burnhamthorpe Road between Ninth Line and Sixteen Mile Creek that is not affected by the future William Halton Parkway. This section of Burnhamthorpe Road is within the NOCSS limits, located east of Sixteen Mile Creek. Therefore, the proposed improvements of the Burnhamthorpe Road section must satisfy the goals and objectives such as watershed characteristics (environment and land use) and natural processes (hydrology, hydraulics, fluvial geomorphology, water quality, riparian systems etc.). There are three watersheds (Joshua's Creek, East Morrison Creek, and Sixteen Mile Creek), which are conveyed by seven culvert crossings located within the Burnhamthorpe Road Character Study limits. Proposed improvements to Burnhamthorpe Road must adhere to the fundamental objectives of the watershed management strategies of each watershed described in NOCSS.

The NOCSS provides clear directions in terms of the hydrologic, hydraulic and stormwater management (SWM) targets for the Joshua's Creek, East Morrison Creek and Sixteen Mile Creek watersheds. The improvements of the Burnhamthorpe Road sections can be carried out in such a way that meets the hydrologic, hydraulic and SWM targets. The proposed Burnhamthorpe Road design, according to the NOCSS, will ensure sustainable development.

4 Corridor Specific Considerations

To inform the development of alternative road designs and the ultimate selection of a Preferred Design, the Project Team undertook a review, evaluation and assessment of corridor specific considerations. This review included assessments of current conditions, any relevant plans or proposed conditions, and implications of the assessment on the development of alternative road designs. It considered urban design, context sensitive design, transit provisions, future traffic capacities, active transportation provisions, parking provisions, urban forestry requirements, utility and municipal servicing requirements, and stormwater management provisions.

The following sections summarize the results of the corridor specific considerations assessment.

4.1 Urban Design

Field investigations were undertaken to assess the study corridor's current design conditions including existing streetscape features and grades, vegetation, built form and cultural heritage. The results of these investigations are described below and were considered throughout the Burnhamthorpe Road Character Study process.

Road Profile and Grades

The section of Burnhamthorpe Road within the Study Area generally is a rural two-lane paved route within an approximate 20-metre right-of-way. The topography in the vicinity of the Study Area generally consists of level plains and gently rolling hills.

Looking west along Burnhamthorpe Road

Looking east along Burnhamthorpe Road

Public Safety, Way Finding and Traffic Control

The study corridor is presently a vehicle-oriented environment with a posted speed limit of 60 km/h. Heavy trucks are currently not permitted on Burnhamthorpe Road. The road does not include features to encourage pedestrians to walk along it or to attempt to cross it.

Looking west at Burnhamthorpe Road – Trafalgar Road intersection

Looking east at Burnhamthorpe Road – Neyagawa Boulevard intersection

Signage and route markers are present along the corridor, including:

- Speed limit signs at multiple locations;
- 'No Shoulder' signs attached to the existing utility poles at multiple locations;
- School Zone signs close to the Al-Falah Islamic Centre and the King's Christian Collegiate schools;
- 'No Truck' signs at Burnhamthorpe Road's intersections with Neyagawa Blvd. and Fourth Line;
- A 'No Exit' sign at the intersection of Burnhamthorpe Road and Fourth Line provides wayfinding; and
- Equestrian signs and 'Caution Drive Slowly' signs at active farming areas.

Signs at the Burnhamthorpe Road – Fourth Line intersection

Signs at the western end of the Study Corridor

Existing signs along the study corridor

Existing Vegetation along the Corridor

Vegetation adjacent to the site corridor is dominated by the agricultural landscape. There are also scattered patches of forest and cultural woodland, mainly associated with rural residences. Other vegetation features isolated throughout the study area include equestrian ranch landscape and narrow forests surrounding watercourses, hedgerows, and landscape plantings close to commercial/institutional facilities.

Looking south towards the agricultural fields on Burnhamthorpe Road between Fourth Line and Sixteen Mile Creek

View of Havencrest Riding Academy at 382 Burnhamthorpe Rd. West.

Forest on south side of corridor adjacent to Sixteen Mile Creek

Landscape plantings in front of King's Christian Collegiate School

Existing Built Form

Farms and rural properties predominantly line Burnhamthorpe Road, along with isolated commercial buildings and a few institutional facilities. Some of the buildings are close to the road right-of way; others are set back from the road with fences enclosing the fields adjacent to the road.

View of farm complex on the south side of the study corridor between Ninth Line and Trafalgar Road

View of residential properties on the north side of the study corridor between Fourth Line and Sixteen Mile Creek

View of Ontario Zoroastrian Community Foundation (O.Z.C.F.) at 1187 Burnhamthorpe Rd. East

View of King's Christian Collegiate located at southwest corner of Burnhamthorpe Road -Neyagawa Blvd. intersection

Streetscape Elements (i.e. Lighting, Utilities and Transit amenities)

Currently the study corridor has a rural cross section with grassy ditches and narrow shoulders.

Between Ninth Line and Trafalgar Road, existing utility poles are located along the north side of Burnhamthorpe Road. From Trafalgar Road to the Sixth Line, utility poles are located on both sides of the corridor. From Sixth Line to the west end of the corridor, utility poles are on the south side.

Traffic signal poles with lighting are placed within close proximity of Burnhamthorpe Road's intersections at Trafalgar Road and Neyagawa Boulevard. Lighting fixtures are also located at these intersections, but there are no street lights between the intersections.

There are no existing provisions for pedestrians or cyclists along the study corridor, although it is frequently used by avid cyclists. Burnhamthorpe Road also does not currently provide amenities or infrastructure for public transit services.

Views and vistas

The study area is predominantly characterized by farm complexes with agricultural fields, fencing, tree lines and rural residences. Several equestrian ranches are situated between Neyagawa Boulevard and Sixteen Mile Creek.

Views of rural open spaces are prevalent east of Neyagawa Boulevard. West of Neyagawa Boulevard, the vista becomes notably narrower due to the dense woodlands located on both sides of the road.

Rural landscape along the study corridor

View along the Burnhamthorpe Road towards its west end

Cultural heritage resources & built heritage resources

Burnhamthorpe Road's roadscape from Ninth Line to Bronte Road (Regional Road 25) was identified as a cultural heritage landscape by the NNOTC EA. This encompasses the study corridor.

Within the study area, three historic farm complexes, barns, and residential properties are listed or designated under the *Ontario Heritage Act*. For example, the intersection of Burnhamthorpe Road and Ninth Line was once the location of the former hamlet of Snider's Corners and some buildings still remain.

Urban Design Implications

North Oakville is expected to transition into a more compact and urban community over the coming decades. As such, the current two-lane rural road may no longer be appropriate in some sections of Burnhamthorpe Road between Ninth Line and Sixteen Mile Creek.

As the corridor evolves, context sensitive design will be critical. The integrity of the current built form and cultural heritage landscape should be maintained or enhanced where possible, while ensuring that new development is accommodated and diverse modes of transportation are promoted.

While the North Oakville East Secondary Plan establishes a compact, urban built form across much of North Oakville, a lengthy transitional period is expected. The new road and streetscape design for Burnhamthorpe Road will therefore require an effective and meaningful phasing strategy that is beyond the scope of this study.

4.2 Transportation

As a Character Road, the future Burnhamthorpe Road, outside of the sections coincident with the future William Halton Parkway, is intended to serve an Avenue or Connector/Transit Corridor function as defined by the NOESP. Burnhamthorpe Road is envisioned by the NOESP to generally provide two travel lanes (one in each direction) with potential on-street parking, bike

lanes, and sidewalks on both sides. Direct access to Burnhamthorpe Road from abutting properties is anticipated.

Burnhamthorpe Road's design strives to balance the Town's desire to preserve existing features against the goal of establishing a destination street that provides various mobility choices.

Travel Lanes

The analysis contained in the Oakville Transportation Master Plan (TMP) indicates that east-west travel across North Oakville can generally be accommodated by the recommended road network in 2031. On Burnhamthorpe Road, the forecast link volumes can be accommodated by two travel lanes with ample surplus capacity (2031 volume-to-capacity ratios are below 0.60). Side streets as well as parallel streets to the north and south of Burnhamthorpe Road are also expected to operate well within capacity.

Based on the modeling completed for the Town of Oakville's approved Transportation Master Plan - Switching Gears (TMP), 2031 forecast PM peak hour, peak direction traffic volumes on Burnhamthorpe Road are in the order of 400 vehicles. **Table 4-1**, below, summarizes the projected PM peak hour link volumes and forecast V/C ratios on Burnhamthorpe Road, under the TMP's base case and recommended strategy.

Table 4-1. Projected V/C Ratios on Burnhamthorpe Road

Description	Eastbound			Westbound		
	PM Volume	Total Capacity	V/C Ratio	PM Volume	Total Capacity	V/C Ratio
Base Case Trend						
West of Sixth Line	394	700	0.56	384	700	0.55
East of Sixth Line	308	700	0.44	464	700	0.66
East of Trafalgar Road	6	700	0.01	64	700	0.09
Recommended Strategy Widen Arterials + Midtown + New Barrier Crossings + High Transit + High TDM						
West of Sixth Line	396	700	0.57	289	700	0.41
East of Sixth Line	272	700	0.39	329	700	0.47
East of Trafalgar Road	2	700	0	17	700	0.02

Based on an assumed lane capacity of 700 vehicles per hour per lane (vphpl) in the TMP and the TMP projected PM peak hour link volumes, forecast V/C ratios for various sections of Burnhamthorpe Road range from 0.60 in the Transitional Area to the west of the Trafalgar Urban Core to 0.20 in much of the remaining sections of the corridor. Therefore, on the basis of forecast traffic volumes, Burnhamthorpe Road is projected to operate at a highly acceptable Level of Service 'B' or better with implementation of the North Oakville road network and TMP recommendations. This suggests future traffic on Burnhamthorpe Road can generally be accommodated by two travel lanes (i.e., one in each direction).

However, to maintain overall traffic flow as well as desired on-street parking, considerations for potential turning movements at side street intersections have also been taken into account.

Details of the transportation analysis are outlined in **Appendix B**.

Turn Lanes

Intersection capacity and queuing analysis was completed for major intersections along Burnhamthorpe Road within the Study Area, based on traffic volume assumptions reflecting the ultimate build out of North Oakville in accordance with the NOESP. Since traffic forecasts for the study intersections are unavailable, the future traffic volumes were estimated based on limited data from traffic studies supplied to MMM by the Town of Oakville, and a series of assumptions. It should be emphasized that the future traffic volumes were developed for the purpose of a high-level assessment of potential road right-of-way and intersections requirements along Burnhamthorpe Road, and that the assumptions will need to be revisited as more details become available as North Oakville redevelops given the ranges of development levels permitted within the NOESP.

Future traffic volumes at key intersections were extracted directly from the traffic impact studies related to Star Oak Developments, Joshua's Creek Lands, and Petgor Draft Plan. The extracted future traffic volumes reflect the horizon years of 2022 or 2028, depending on the horizon year analyzed in the individual traffic impact studies. The extracted future traffic volumes represent the traffic generated by these three development proposals, as well as a number of other proposed developments that are included as part of the background traffic in the studies. **Figure 4-1** illustrates the developments included in the extracted future traffic volumes. **Table 4-2** summarizes the statistics for each development, as well as the horizon year the development is expected to be completed, that the extracted future traffic volumes represent.

Table 4-2. Planned Development Levels included in Traffic Impact Studies

Traffic Impact Study	Proposed Units	Horizon Year
Star Oak Developments Limited	434 units	2018 (2018 and 2028 analyzed)
Joshua's Creek Lands (Mattamy)	3,014 units	2022
Petgor Draft Plan (Mattamy)	780 units	2022
Sixth Line Developments	530 units	2016
Emgo Draft Plan	618 units	2017
The Preserve Phase 2	783 units	2019
Timsin Development	231 units + 8,000 ft2 commercial	2015
Viva Retirement Development	251 units	2017
Green Ginger Developments	1,251 units	2016
Total	**7,892 units + 8,000 ft2 commercial**	-

Based on a review of the available material it is estimated that a total of 7,892 residential units and 8,000 ft^2 of commercial uses are accounted for in the extracted future traffic volumes.

It should be noted that the studies did not provide all of the turning movements along the corridor. Where there were gaps in the data, traffic volumes were derived based on the upstream and downstream link volumes, with consideration for the 2031 PM Peak Hour Total Volumes (Preferred Scenario 31105) from the Oakville Transportation Master Plan (TMP) Model, and balancing of traffic throughout the corridor. The derived traffic volumes for the AM and PM peak hours are illustrated in **Figure 4-2**.

Two-Way Left Turn lane

Burnhamthorpe Road's intersections with Ninth Line, Trafalgar Road, Sixth Line, and Neyagawa Boulevard are currently all-way stop controlled with overhead beacons. Each of these intersections, except Sixth Line, has a separate left-turn lane on the Burnhamthorpe Road approaches.

The need and justification for a two-way left turn lane was considered in areas with multiple mid-block driveway accesses. A vehicle turning left into a driveway could wait in the centre turn lane without impeding traffic in the travel lanes. The potential for exclusive left turn lanes at intersections is also protected and could be implemented, if warranted.

Where a centre turn lane is not needed, there is flexibility to provide pedestrian refuge within the median. These features provide safety and traffic calming benefits, stimulate visual interest and animation at the street level, and ultimately enhance the attractiveness of Burnhamthorpe Road as a Character Road.

However, it should be recognized that the distance between side streets may affect the functionality of a two-way left turn lane. If the distance between side streets is less than 200m, there may only be one or two driveways and the need for a centre left turn lane will be greatly reduced. As well, the centre turn lane would increase the width of the road allowance. Given the limited transportation benefits, it was determined that two-way left turn lanes would not be carried forward as an alternative solution.

On-Street Parking

Where adjacent land uses indicate the need or desire for on-street parking (such as within Urban Core or Transitional areas as designated by the NOESP), parking bays, lay-bys, or off-peak parking lanes are suggested. Parking bays will establish a permanent on-street parking supply, help to maintain a continuous bike lane, and provide overall traffic calming benefits. Pedestrians will benefit from shorter crossing distances where parking does not exist. Where parking bays are not provided, there is also flexibility for alternative use of the boulevard space. Parking bays can be temporarily converted, for example, to create wider sidewalks or bike parking during special events.

Bicycle Facilities

Based on anticipated traffic volumes and in accordance with the recommendations of Oakville's Active Transportation Master Plan (ATMP) and Ontario Traffic Manual (OTM) Book 18: Bicycle Facilities, bike lanes should be provided along the entire length of Burnhamthorpe Road. Provision of bike parking is also recommended in developed areas, recognizing that Burnhamthorpe Road will become a destination street.

Transit

The NOESP Transit Plan identifies Burnhamthorpe Road as a "Secondary Transit Corridor". Secondary Transit Corridors are intended to provide a high level of service with frequency of 10 to 15 minutes. These corridors would not typically include dedicated transit lanes, although infrastructure for transit priority might be necessary in some key bottleneck areas. Transit service would provide connections to community services and Primary Transit Corridors, such as Trafalgar Road and Dundas Street. Primary Transit Corridors are planned to provide more frequent transit service of every 2 to 10 minutes using reserved bus lanes or high occupancy vehicle lanes.

The curb lanes along Burnhamthorpe should be a minimum 3.5m wide to accommodate transit vehicles. Where on-road cycling facilities are to be provided jointly with mixed-use traffic, the minimum lane width should be 4.0m.

Trafalgar Urban Core and Neighbourhood Central Activity Nodes

Burnhamthorpe Road traverses the Trafalgar Urban Core and three Neighborhood Central Activity Nodes. In accordance with the NOESP, wider sidewalks must be considered within these areas. A transit stop should be provided at each Neighbourhood Central Activity Node.

Natural Heritage System Area

The sections of Burnhamthorpe Road crossing the Natural Heritage System should generally provide two travel lanes (one in each direction) with no on-street parking. A sidewalk may be considered on the developed side only, subject to the availability of a trail on the other side of the street.

Lane Dimensions

The NOESP expresses a desire for Burnhamthorpe Road's right-of-way (ROW) width to be kept to the minimum, with a typical ROW of 20 metres and a maximum ROW of 24 metres. Following Oakville's Complete Streets approach, street and urban design elements will be incorporated to support the comfort of pedestrians, transit users and cyclists. Travel lanes, on-street parking, bike lanes, sidewalks, street furniture, landscaping, and utilities will compete for valuable space. Lane dimensions will be determined to ensure safety and efficient use of the right-of-way while maintaining minimum lane widths.

In summary, a cross section for Burnhamthorpe Road that comprises two travel lanes (one in each direction) separated by a two-way left turn lane (if necessary), bike lanes and parking bays on either side of the street, as required, will promote continuity of the travelled portion of the road, maintain adequate traffic flow and safety of operations, and provide flexibility to respond to changing conditions along the corridor by introducing variations in parking, boulevard and median treatments.

4.3 Urban Forestry Requirements

With the proposed urbanization of Burnhamthorpe Road, trees along the future roadway could be impacted. An inventory of vegetation was undertaken to develop an awareness of these potential impacts prior to the development of road design alternatives. The inventory was undertaken up to the limits of the existing road right of way during the week of August 19th to 23rd, 2013. Tree species, size and condition were identified.

Vegetation Summary

Individual trees and trees in groupings were found to be a mixture of native and non-native species. Higher concentrations of native species were observed adjacent to Morrison Creek. Vegetation is less dense adjacent to farm fields or within the frontage of residential, institutional and commercial properties. A majority of vegetation within the right of way has either been planted, established by seed or established naturally, or are remnants of hedgerows or forests and ranges in size from 5cm to 100cm diameter measured at breast height (DBH) and 4m to 20m in height. Non-native and invasive Manitoba Maple and Norway Maple were observed with the right of way. No regionally rare or endangered species were found.

Species consist of an abundance of Apple (*Malus sp*.), Pear (*Pyrus sp*.), Cherry (*Prunus sp*.), Ash (*Fraxinus sp*.); frequent amounts of Manitoba Maple (*Acer negundo*); the occasional Elm (*Umus sp*.), Silver Maple (*Acer saccharinum*), Hackberry (*Celtis occidentalis*), Black Cherry (*Prunus serotina*), Bur Oak (*Quercus macrocarpa*), Norway Maple (*Acer platanoides*), Basswood (*Tilia americana*), Cedar (*Thuja occidentalis*), Lilac (*Syringa vulgaris*); and to a lesser extent White Oak (*Quercus alba*), Red Pine (*Pinus resinosa*), Willow (*Salix sp*.), Sugar Maple (Acer saccharum), Colorado Blue Spruce (*Picea pungens 'Glauca*'), Black Walnut (*Juglans nigra*), White Pine (*Pinus strobus*), American Beech (*Fagus grandifolia*), Red Maple (*Acer rubrum*), Aspen (*Populus sp*.), Witch Hazel (*Corylus colurna*), Bitternut Hickory (*Carya cordiformis*), White Birch (*Betula papyrifera*), Austrian Pine (*Pinus nigra*) and White Spruce (*Picea glauca*).

Tree Preservation

Native trees found to be in good condition are recommended to be preserved where possible and incorporated into the streetscape design as these trees will provide shade for pedestrians and a connection to the history of the road.

Vegetation within the Glenorchy Conservation Area and along the branches of Morrison Creek should be preserved and streetscape designs should avoid impacts to these areas.

Twelve significant trees were observed within the study areas. Priority should be given to the preservation of these trees due to the ecological benefits they provide from taking in pollutants and releasing clean air, the shade cast from the vast canopy keeping asphalt cool in summer reducing the urban heat island to providing a heritage connection to the past character of the road. Future streetscape designs should incorporate these trees into the design and minimize impacts. These trees consist of:

- T-32: Bur Oak (81cm DBH)
- T-75: Bur Oak (77cm DBH)
- T-35: White Pine (51cm DBH)
- T-80: American Elm (50cm DBH)
- T-109: Hackberry (51cm DBH)
- T-128: Hackberry (51cm DBH)
- T-208: Bur Oak (55cm DBH)
- T-213: Bur Oak (50cm DBH)
- T-215: Bur Oak (70cm DBH)
- T-231: Bur Oak (55cm DBH)
- T-238: Hickory (60cm DBH)
- T-247: Austrian Pine (70cm DBH)

Note: T-xx refers to the numerical value given to an individual tree or a tree in a grouping referenced in **Appendix C.**

Urban Forestry Implications

Streetscape designs and right-of-way width should consider minimal impacts to ecologically sensitive areas including the Glenorchy Conservation Area and any areas adjacent to creeks.

Priority should be given to the preservation of significant trees along the corridor; road designs should be adapted wherever necessary and feasible to facilitate tree preservation.

4.4 Utilities & Municipal Servicing Requirements

Existing Utilities

There is an existing aerial hydro line along the entire extent of the Burnhamthorpe Road corridor. Aerial Bell plant is typically located on the hydro poles. There are no gas mains, storm sewers, sanitary sewers or cable television plant along the Burnhamthorpe Road corridor.

Proposed Conditions

Watermains ranging in size from 300mm to 1200mm are proposed along the entire Burnhamthorpe Road corridor. No trunk sanitary sewers are proposed along the east portion of the Burnhamthorpe Road corridor, but sub-trunk sewers and local sanitary sewers are anticipated along the west Burnhamthorpe Road corridor.

Underground gas, telecommunications, and hydro plant will be installed along the Burnhamthorpe Road corridor to suit adjacent land uses. All utility plant will be buried within the road allowance. Therefore, provisions for utilities and municipal services must be included in the proposed right-of-way.

There are no opportunities for stormwater management ponds within the road allowance. Therefore, the road drainage will need to be directed to ponds that will provide water quality and quantity controls prior to discharge to watercourses. Refer to Section 4.5 for further details.

4.5 Stormwater Management

An examination of the potential impacts of the proposed Burnhamthorpe Road design on the receiving watercourses was carried out in terms of water quality and quantity. This section summarizes how each will be addressed with the various requirements of the Town of Oakville, Conservation Halton (CH), the Ministry of the Environment (MOE) Stormwater Management Planning and Design Manual (2003), and the Ministry of Transportation (MTO). Further detail is provided in the Stormwater Management Report within **Appendix D**.

Background Information

The background information reviewed as included the following:

1. North Oakville Creek Subwatershed Study (NOCSS) (August 25, 2006)
2. Town of Oakville, Development Engineering Procedures and Guidelines, October 2009.
3. Ministry of Transportation, Highway Drainage Design Standards (MTO HDDS), January 2008.
4. Ministry of Environment Stormwater Management Planning and Design Manual, 2003.
5. Conservation Halton, Policies, Procedures and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document, April 27, 2006.

Site Visit

Field investigations of the existing drainage features were conducted on August 4, 2013 to collect and confirm the existing culvert sizes and types, culvert conditions, depth of sediment accumulations, flow obstructions, drainage divides, and drainage pattern.

Stormwater Management Criteria

Based on the guidelines outlined in the MOE Design Manual, MTO, Town of Oakville, Halton Region, and Conservation Halton regarding the proposed developments, the stormwater management criteria applicable to new impervious surface for Burnhamthorpe Road includes:

- Water Quality Control – Provide long-term removal of 80% of total suspended solids (TSS) on an annual loading basis.
- Water Quantity Control – Peak flow rates resulting from the proposed development for the 2-year to regional storm events must be controlled to the pre-development condition.

Existing Conditions

The study area is a part of the South Slope Physiographic Region of Southern Ontario (Chapman and Putman, 1984). The South Slope includes a strip of land between the Lake Iroquois shoreline to the south and the Peel Plain to the north. The existing land uses adjacent to the study area are primarily agricultural, with a few scattered wooded areas, and some residential developments.

The study area for the Burnhamthorpe Road Character Study is drained by the Sixteen Mile Creek, East Morrison Creek, West Morrison Creek, and Joshua's Creek. The study area drains in a north-west to south-east direction. These watersheds cross Burnhamthorpe Road via numerous culverts and bridge crossings.

Burnhamthorpe Road is presently a two lane rural roadway. Runoff from the road drains in open drainage systems consisting of road side ditches and culvert/bridge crossings. The external areas located north of Burnhamthorpe Road drain from north to south and are conveyed by the culvert/bridge crossings across Burnhamthorpe Road. The existing condition drainage mosaic is shown in **Figure 4-1**. A description of the culvert/bridge crossings are provided below.

CULVERT/BRIDGE CROSSINGS

There are a total of seven existing culverts within the study limits (shown in **Figure 4-1**). These existing culverts (also mentioned in the NOCSS) were identified in the field. A brief description of these culverts is provided in **Table 4-3**. Culverts JC-B2, JC-B4, JC-B7, JC-B9, and JC-B10 are within the Joshua's Creek watershed. Culvert EM-B1 is in the East Morrison Creek watershed. Finally, Culvert ESM-B14 is within the Sixteen Mile Creek watershed. It should be noted that the JC-B4 crossing is a bridge crossing. The condition of these culverts observed during the field investigations and the 2012 Municipal Structure Inspection Forms is described in **Table 4-3**.

A review of the drawings received from Halton Region indicated that there are additional culvert crossings draining the JC7, EM1-1, and WM1-1 drainage areas. However, these culvert crossings were not identified in the NOCSS and their hydraulic assessments are outside the scope of this report.

It should be noted that the drawings received from Halton Region did not contain the lengths of the culverts, or the culvert inverts for the culverts located within our study limits, except where regular biennial inspections are undertaken (see Structural ID in **Table 4-3**). Additional information for the existing culverts is required to perform a hydraulic assessment of the existing culverts.

Table 4-3. Existing culvert/bridge crossings condition assessment

No.	Culvert ID	Structure ID	Size (mm)	Material	Type of Structure	Condition
1	JC-B2	-	600	CSP	Circular Culvert	Significant sediment deposition both upstream and downstream of culvert
2	JC-B4	27-1141620 BR03	4570x914	Concrete	Bridge	Built in 1940. BCI Index = 57.4. Unstable embankments. Cracks in deck wearing surface to be sealed. Patch repair abutment walls, restore SW embankment, and reface wingwalls.
3	JC-B7	27-1141620 BR01	3048x1524	Concrete	Box Culvert	Built in 1970. BCI Index = 69.1. Severely scaled at ends of deck with exposed rebar. Delamination on exterior soffit. Built in 1960. BCI Index = 74.1. Structure in good condition.
4	JC-B9	-	600	CSP	Circular Culvert	Upstream side buried. Significant sediment deposition on downstream side of culvert.
5	JC-B10	-	600	CSP	Circular Culverts	Two culverts located in parallel. The downstream side of 450 mm culvert is deformed.
		-	450	CSP	Circular Culverts	
6	-	27-1141590 BR01	1500 x 2600	Concrete	Box Culvert	Built in 1960. BCI Index = 74.1. In good condition.
7	ME-B1	-	450	CSP	Circular Culvert	Good condition
8	ESM-B14	27-1141480 CU01	1825	CSP	Circular Culvert	Built in 2002. BCI Index = 82.4 Excellent condition.

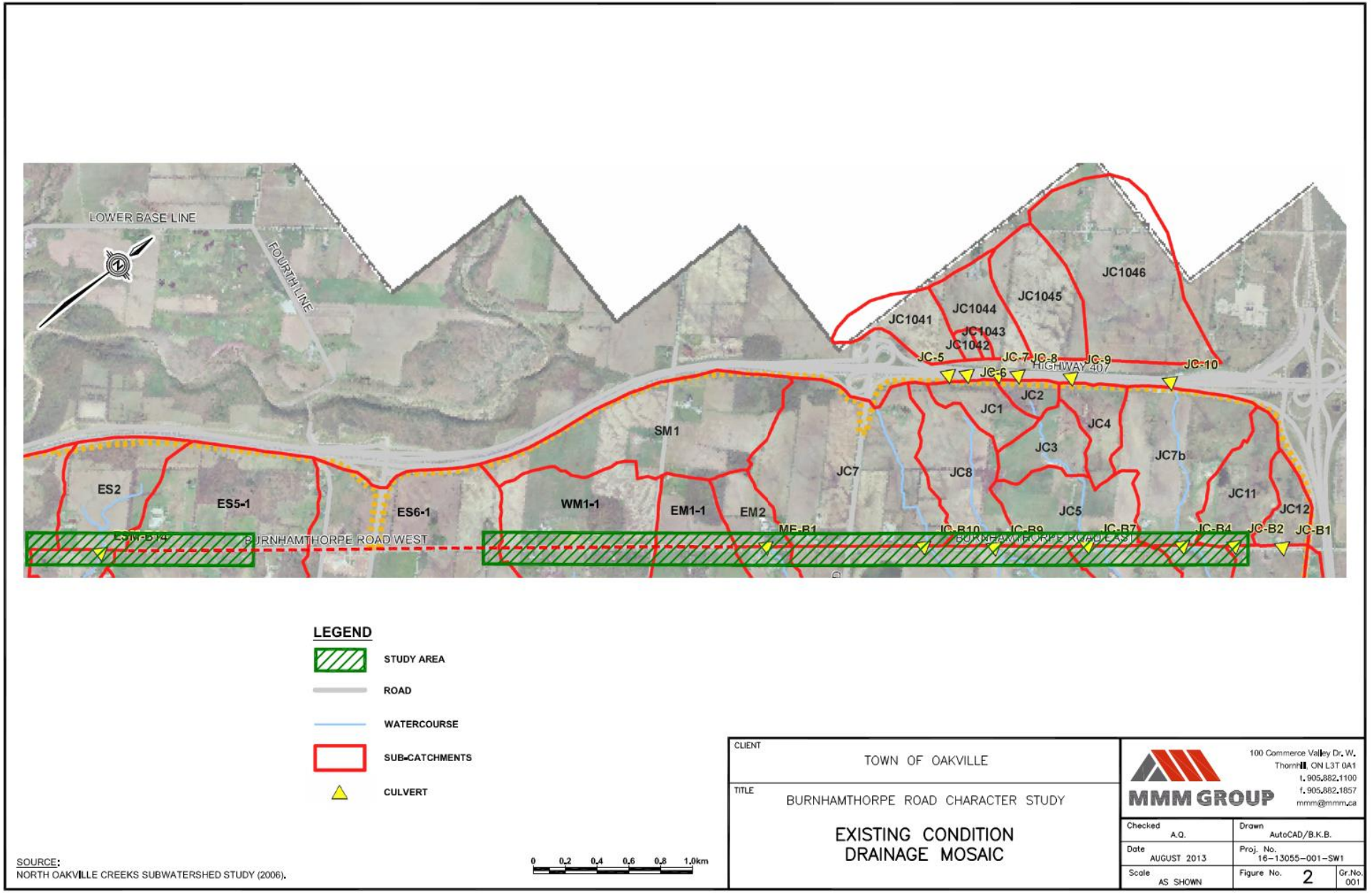


Figure 4-1. Existing drainage mosaic

The existing condition hydrologic modelling was conducted with the Guelph All-Weather Storm Event Runoff (GAWSER) computer simulation model. The GAWSER model was also used in the NOCSS. The original GAWSER model received from CH was modified for the Burnhamthorpe Road Character Study. The GAWSER model was used for single event analysis. The 24hr Keifer and Chu (Chicago) design storms, as per the *Development Engineering Procedures and Guidelines Manual* (Town of Oakville, 2009) was used for the single event simulations.

The hydrologic modelling parameters were obtained from the existing condition hydrologic model received from CH. The peak flow rates from the existing condition hydrologic model for the 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, and 100-yr storms at the different culvert crossings, are shown in **Table 4-4**.

Table 4-4. Results of existing condition hydrologic analysis

Watershed	Culvert ID	Drainage Area (ha)	Peak Flows (m^3/s)					
			2 yr	5 yr	10 yr	25 yr	50 yr	100 yr
Sixteen Mile Creek	ESM-B14	39.30	0.308	0.518	0.651	0.841	0.974	1.110
East Morrison	ME-B1	14.62	0.155	0.245	0.299	0.378	0.432	0.488
Joshua's Creek	JC-B10	98.95	0.734	1.150	1.380	1.750	1.990	2.240
	JC-B9	37.00	0.265	0.415	0.500	0.635	0.723	0.816
	JC-B7	180.13	1.800	2.810	3.380	4.270	4.860	5.480
	JC-B4	149.42	0.989	1.520	1.830	2.310	2.620	2.960
	JC-B2	0.27	0.252	0.394	0.473	0.597	0.679	0.765

Proposed Conditions

Burnhamthorpe Road will become a Character Road facility, which will involve a transformation from a rural road to an urban collector road, with curb and gutter and storm sewers. Stormwater management tasks to be completed during detail design include:

- Proposed Culvert Hydraulic Assessment;
- Proposed Hydrologic Modelling;
- Stormwater Management- Quality and Quantity Control; and
- Conclusions and Recommendations.

5 Alternative Planning Solutions

The Municipal Class Environmental Assessment process recognizes that there is usually more than one way to solve a problem and requires that proponents explore all reasonable and feasible solutions to the problem. As Phase 2 of the Municipal Class Environmental Assessment process, the proponent is required to identify all reasonable alternative solutions to address the problem or opportunity.

As described across the previous sections of the Environmental Study Report, the study corridor is expected to become increasingly urban. As a result, greater volumes of local vehicle traffic, public transportation, pedestrians, and cyclists are anticipated and will need to be accommodated. The alternative solutions explored to address these greater expected transportation volumes include the following:

- Do nothing and maintain the existing condition of Burnhamthorpe Road as a two-lane rural road;
- Build a new east-west transportation corridor to accommodate expected increased volumes of various modes of transportation; and
- Redesign the existing Burnhamthorpe Road to better accommodate the expected future mix of vehicle traffic, public transportation, cycling, and pedestrian activity.

The “do nothing” approach would result in no changes to the road’s current configuration as a two-lane rural road without separate pedestrian or cycling infrastructure in place. For the majority of the corridor, this alternative solution was eliminated due to its inability to meet the transportation needs associated with the majority of the NOESP’s land use designations adjacent to the study corridor. However, it should be noted that the western section of the corridor, from Sixteen Mile Creek to the future William Halton Parkway, is expected to experience a reduced degree of intensification. The “do nothing” alternative was therefore carried forward and evaluated as a Road Design Alternative for this section (see Section 6.1.1).

Construction of a new east-west transportation corridor was also eliminated. As discussed previously, Halton Region has completed the NNOTC EA resulting in the proposed construction of William Halton Parkway, which will assume Burnhamthorpe Road’s current regional road function and carry most of the expected future volumes of vehicle traffic. While this will alleviate much of the inter-regional traffic on Burnhamthorpe Road, it will not address the corridor’s local traffic and urban design issues. As the lands along the Burnhamthorpe Road Character Road study corridor urbanize, a more “urban” road design will be needed to support the new land uses.

In recent years, the Town of Oakville has undertaken extensive studies and policy initiatives impacting the Burnhamthorpe Road Character Road study corridor, including extensive public and stakeholder consultation. The completion of the NOESP, the Active Transportation Master Plan, and other related studies determined that the future Burnhamthorpe Road, as a Character Road, should be redesigned to accommodate the expected future mix of vehicle traffic, public transportation, cycling, and pedestrian activity associated with the expected future mix of land

uses. As a result, it was recommended that the option to redesign the right-of-way be carried forward. The following sections explore Road Design Alternatives for the study corridor.

6 Road Design Alternatives

Phase 3 of the Municipal Class Environmental Assessment process requires that the proponent explore alternative design concepts for the preferred solution. This section describes the full set of design alternatives that have been considered for Burnhamthorpe Road. To ensure compatibility with adjacent land uses, three distinct sets of alternatives were developed for each of three defined sections of the corridor. The three corridor sections correspond with land use designations identified within the NOESP.

The three sections of the corridor are as follows:

1. The **West section** is located just east of Sixteen Mile Creek and is characterized by primarily low to medium density residential land uses;
2. The central **Core section** is defined by the "Trafalgar Urban Core" land use designation, characterized by high density, mixed use development; and,
3. The **Transitional** sections are located to the east and west of the Core section and are intended to accommodate a range of residential (low, medium and high density) and institutional uses subject to compatibility with adjacent uses..

Not all alternatives were carried forward to evaluation. This section provides justification for eliminating alternatives that were deemed to be unsuitable for the Burnhamthorpe Road corridor early in the evaluation process. By only carrying forward reasonable alternatives, the process was simplified and comparisons between viable options were made.

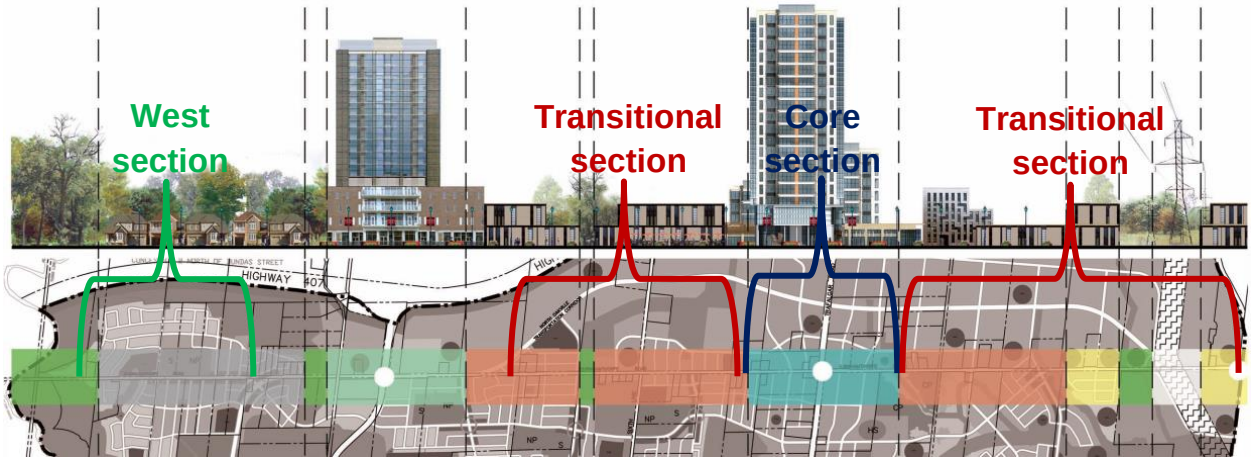


Figure 6-1. Burnhamthorpe road corridor: West, Transitional, and Core sections

6.1 West Section

The West section of the Burnhamthorpe Road corridor is bounded by Sixteen Mile Creek to the west and William Halton Parkway to the east. A segment of the William Halton Parkway separates the West section from the Transitional and Core sections of the corridor. The NOESP designates the properties fronting Burnhamthorpe Road along the eastern portion of the West section as Neighbourhood Centre Area, which encourages mixed use development of two to five storeys high. Toward the west, lands fronting Burnhamthorpe Road are designated Sub-Urban Area, which allows for low density residential development.

The alternative road designs considered for the West section aim to minimize the environmental impact of the right-of-way while considering a range of on-street parking and active transportation facility options. As high volumes of traffic are not expected in this section, all alternatives limit vehicle traffic to two lanes.

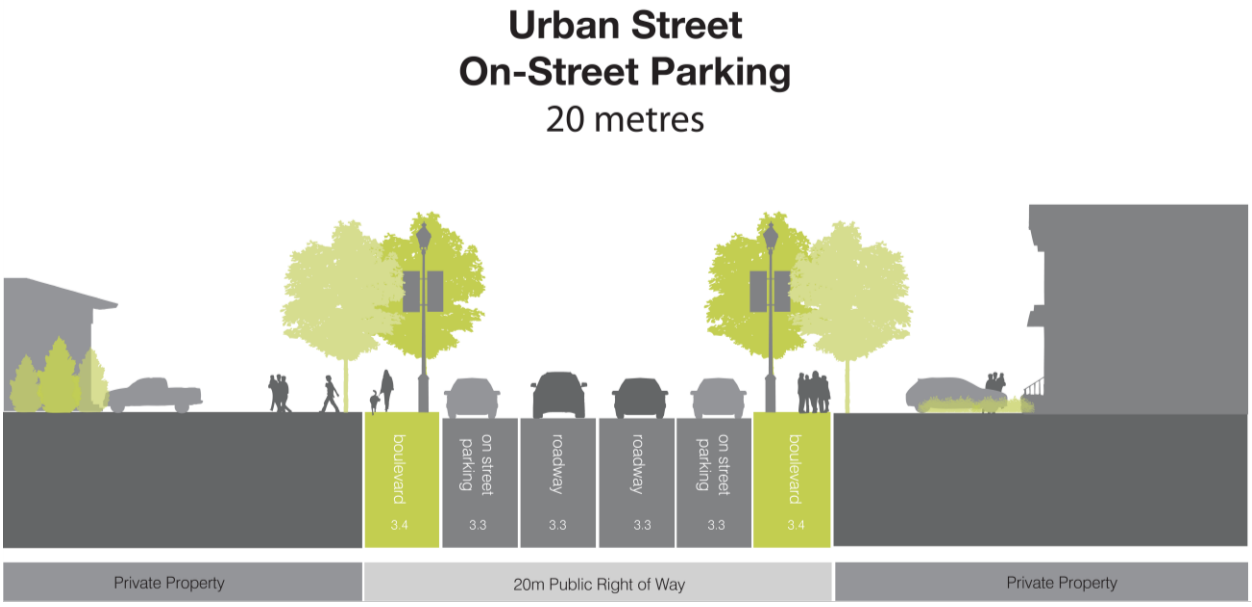
6.1.1 Alternatives to be Carried Forward

WEST 1

Alternative West 1 maintains the current condition of a rural road with a 20-metre right-of-way. 6.0-metre unpaved shoulders and swales are provided along each side of the road. No parking, sidewalks, or dedicated cycling facilities are provided.

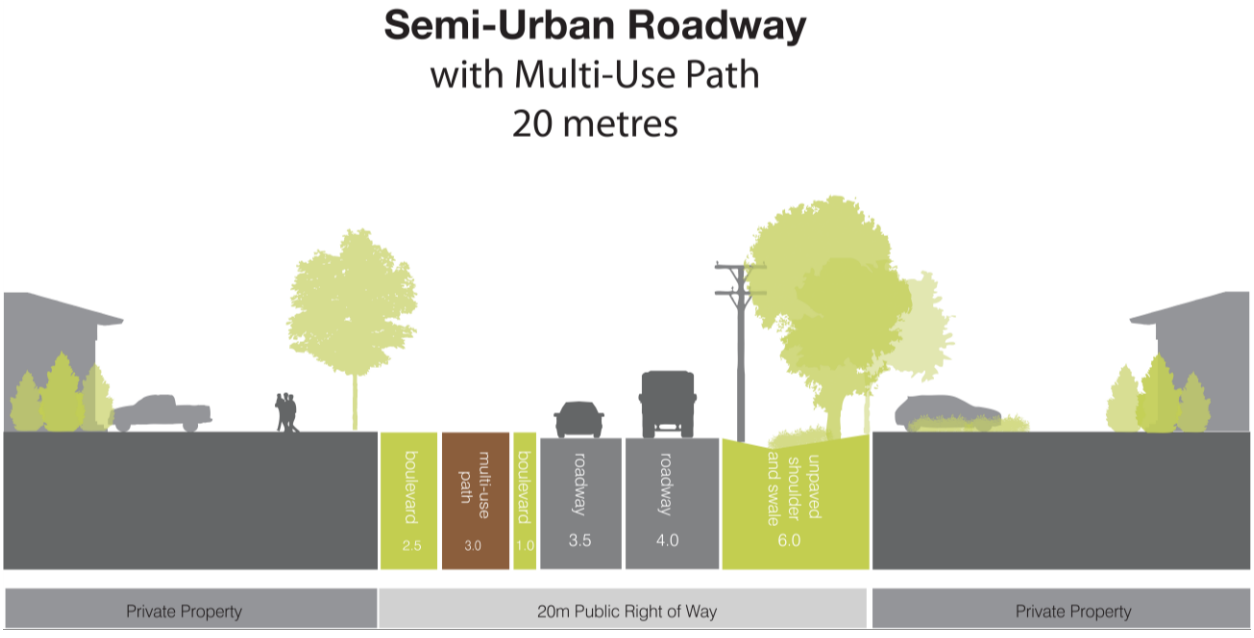
WEST 2

Alternative West 2 is an urban street with a 20-metre right-of-way. It includes on-street parking on each side and 3.4-metre wide pedestrian boulevards. No dedicated cycling facilities are provided.



WEST 3

Alternative West 3 is a semi-urban roadway with a right-of-way of 20 metres. On one side of the road, a 6.0-metre unpaved shoulder and swale is provided. The other side of the road would include a 3.0-metre wide multi-use path with an adjacent 2.5-metre wide boulevard.



WEST 4

Alternative West 4 is an urban street with a 22-metre right-of-way. Bump out on-street parking is provided which could shorten pedestrian crossing distances and provide further opportunities for tree planting, street furniture, and other features. Dedicated 1.5-metre wide bike lanes are also provided with a 0.5-metre painted buffer; this buffer will shift to provide separation from parked vehicles and car doors in areas with on-street parking, and separation from moving traffic in areas without parking. The design also provides 3.2-metre wide pedestrian boulevards on each side.

6.1.2 Alternatives to be Eliminated

All West section alternatives have been deemed reasonable and will be carried forward to detailed evaluation.

6.2 Core Section

The Core section is defined by the Trafalgar Urban Core land use designation within the NOESP. It extends east and west from Burnhamthorpe Road's intersection with Trafalgar Road, which is expected to experience high rates of urban development. The Trafalgar Urban Core designation allows for a range of land uses, including buildings of up to 20 storeys high. The design alternatives for the Core section therefore reflect the need for an urban cross section that provides an attractive pedestrian environment and safe cycling facilities while accommodating higher volumes of local vehicle traffic.

6.2.1 Alternatives to be Carried Forward

CORE 1

Alternative Core 1, with a right-of-way width of 24 metres, provides two lanes of traffic during off-peak hours and four lanes of traffic during peak hours. Off-peak parking lanes are provided on each side. The design also includes dedicated bike lanes with a 0.5-metre wide painted buffer from vehicles. 3.4-metre wide boulevards with 1.8-metre wide sidewalks are provided on each side.

CORE 2

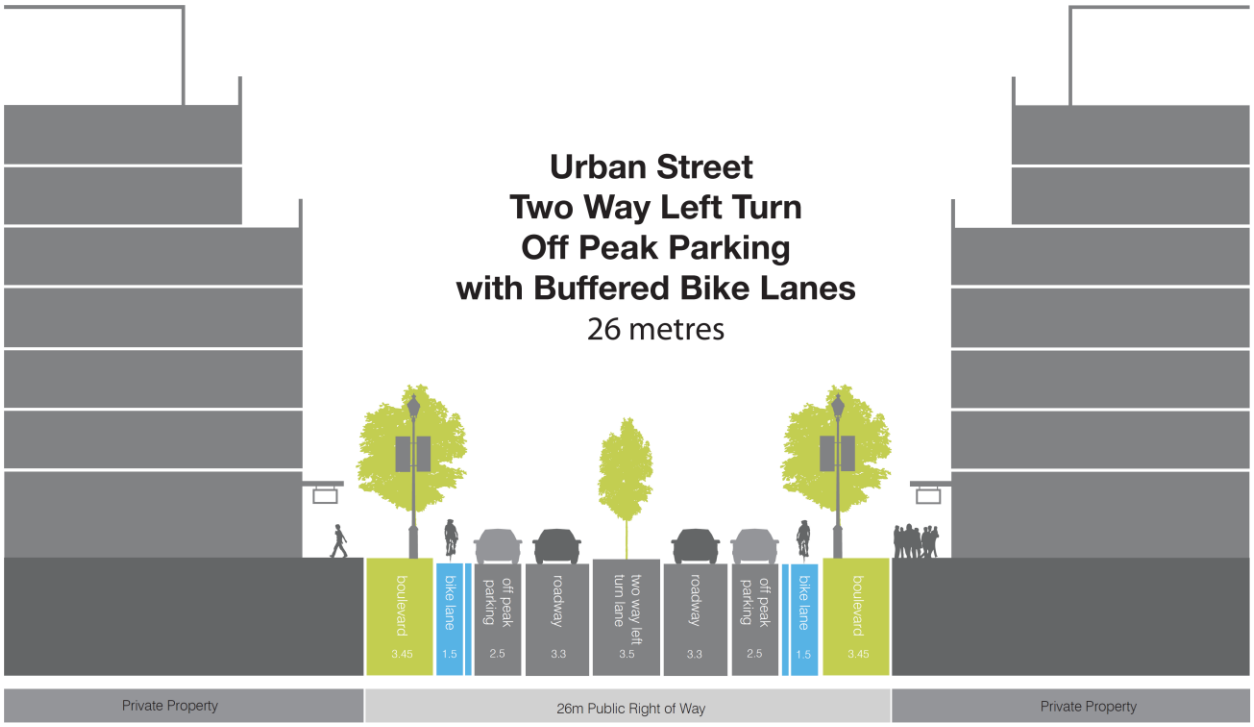
Similar to Core 1, Alternative Core 2 has a right-of-way of 24 metres and provides two lanes of traffic at all hours, in addition to off-peak parking lanes on each side. On one side of the road, a 3.0-metre wide multi-use path is provided which would be enhanced at street crossings. On the opposite side of the road, a 5.4-metre wide boulevard with sidewalk would be provided.

CORE 3

Alternative Core 3 has a 24-metre right-of-way and provides two lanes of traffic. A 3.5-metre wide median would separate the traffic lanes and allow space for two-way left turn lanes where necessary. Buffered bike lanes are provided, as well as 4.75-metre wide pedestrian boulevards. No on-street parking is provided.

CORE 4

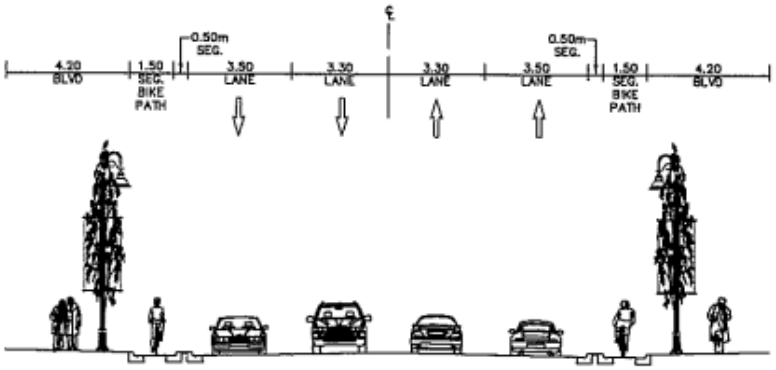
Alternative Core 4 has a 26-metre right-of-way and provides two lanes of traffic in addition to off-peak parking lanes on each side, allowing for four lanes of traffic during peak periods. A 3.5-metre wide median would separate the traffic lanes and allow space for two-way left turn lanes where necessary. The design also includes buffered bike lanes and 3.45-metre wide boulevards.



6.2.2 Alternatives to be Eliminated

CORE 5

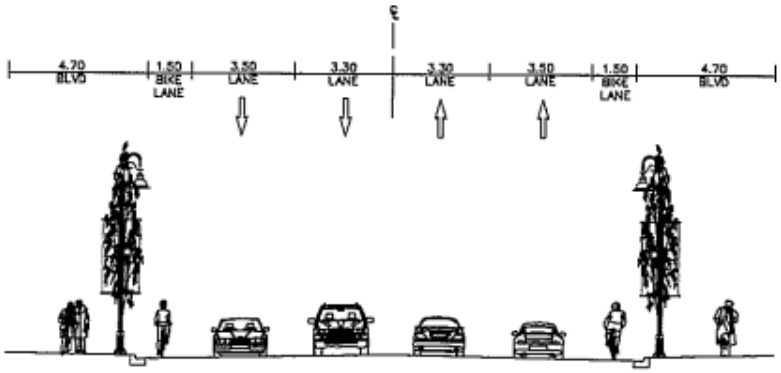
Alternative Core 5 has a 26-metre right-of-way and provides four lanes of traffic as well as segregated bike lanes. No on-street parking is provided. This alternative was not carried forward due it its automobile-oriented nature. The Burnhamthorpe Road Character Study aims to facilitate the corridor's evolution from its current state as a regional arterial to a vibrant and pedestrian-friendly Character Road; this alternative does not achieve this objective.



URBAN STREET
NO PARKING
WITH SEGREGATED BIKE LANES
26 METRES

CORE 6

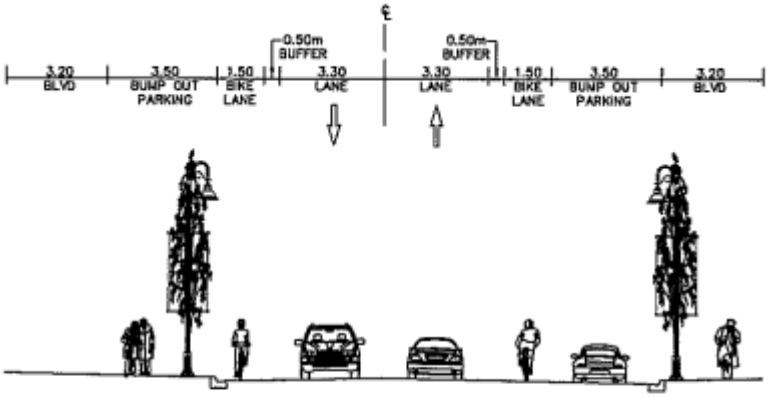
Alternative Core 6 has a 26-metre right-of-way and provides four lanes of traffic as well as buffered bike lanes. No on-street parking is provided. This alternative was not carried forward due it its automobile-oriented nature. The Burnhamthorpe Road Character Study aims to facilitate the corridor's evolution from its current state as a regional arterial to a vibrant and pedestrian-friendly Character Road; this alternative does not achieve this objective.



URBAN STREET
NO PARKING
WITH BIKE LANES
26 METRES

CORE 7

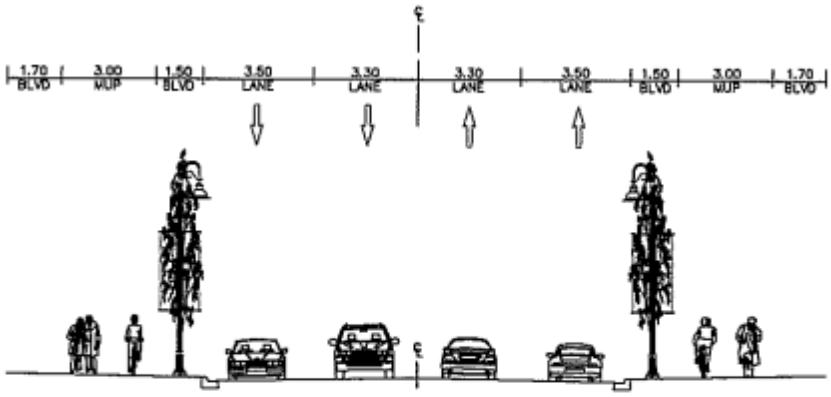
Alternative Core 7 has a 24-metre right-of-way and provides two lanes of traffic, bump out parking, and buffered bike lanes. As the Trafalgar Urban Core is expected to experience higher volumes of traffic than other sections of the Burnhamthorpe Road corridor during peak hours, permanent parking lanes are not recommended. This alternative was not carried forward.



URBAN STREET
BUMP OUT PARKING
WITH BUFFERED BIKE LANES
24 METRES

CORE 8

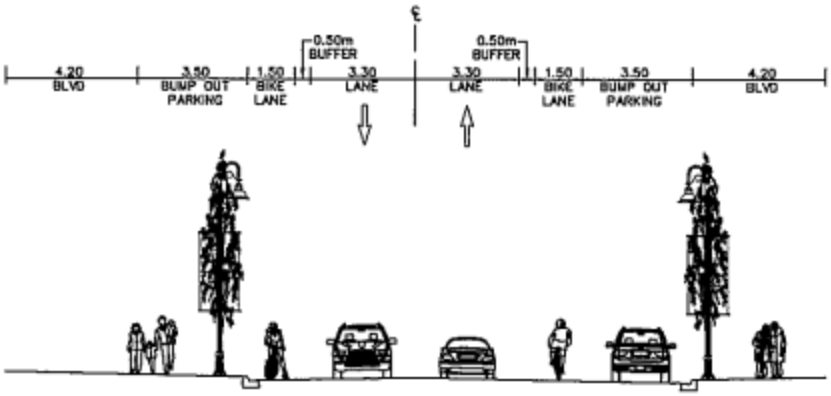
Alternative Core 8 has a 26-metre right-of-way and provides multi-use paths on both sides, four lanes of traffic, and no dedicated cycling facilities. This alternative was not carried forward due to its lack of on-street parking. Additionally, the provision of multi-use paths on both sides of the corridor would interfere with passive pedestrian space. In an area that is expected to accommodate high density mixed use development, this could inhibit pedestrian activity and commercial viability.



URBAN STREET
NO PARKING
WITH MULTI–USE PATH
26 METRES

CORE 9

Alternative Core 9 has a 26-metre right-of-way and provides two lanes of traffic, bump out parking, buffered bike lanes and wide pedestrian boulevards. As the Trafalgar Urban Core is expected to experience higher volumes of traffic than other sections of the Burnhamthorpe Road corridor during peak hours, permanent parking lanes are not recommended. This alternative was not carried forward.



URBAN STREET
BUMP OUT PARKING
WITH BUFFERED BIKE LANES
26 METRES

6.3 Transitional Section

The Transitional sections of the corridor are located directly east and west of the Core section. In the NOESP, these sections are primarily designated Transition Area, allowing for a range of land uses. The density of development is expected to be lower than that of the Trafalgar Urban Core, while still providing an urban and pedestrian-friendly environment. The selection of a preferred alternative for the Transitional sections will consider compatibility with the preferred Core section alternative to ensure continuity in pedestrian, cycling, and traffic facilities.

6.3.1 Alternatives to be Carried Forward

TRANSITIONAL 1

Alternative Transitional 1 has a 22-metre right-of-way with two lanes of through traffic. An on-street parking lane / sharrow for cyclists is provided on each side. 4.2-metre wide boulevards with 1.5-metre wide sidewalks are provided.

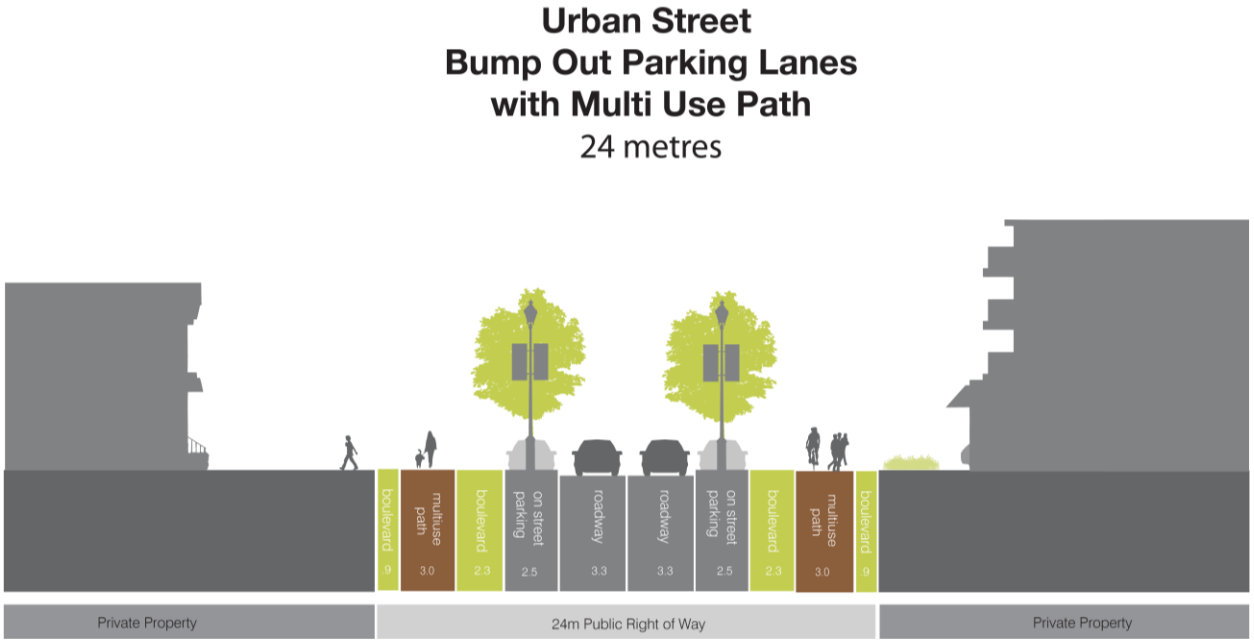
TRANSITIONAL 2

Alternative Transitional 2 has a 24-metre right-of-way with two through lanes of traffic and bump out parking on both sides. Bike lanes are provided, with a painted buffer that provides separation from parked cars in areas with on-street parking, and from moving traffic in areas without parking. 4.2-metre wide boulevards are provided on each side.

Urban Street
Bump Out Parking Lanes
with Buffered Bike Lanes
24 metres

TRANSITIONAL 3

Alternative Transitional 3 has a 24-metre right-of-way with two lanes of traffic. It includes bump out parking lanes, allowing for shortened pedestrian crossing distances and additional opportunities for features such as plantings and street furniture. 2.3-metre wide boulevards are provided adjacent to the bump-out parking lanes. 3.0-metre wide multi-use paths are also provided on both sides, separated from adjacent development by 0.9-metre wide boulevards.



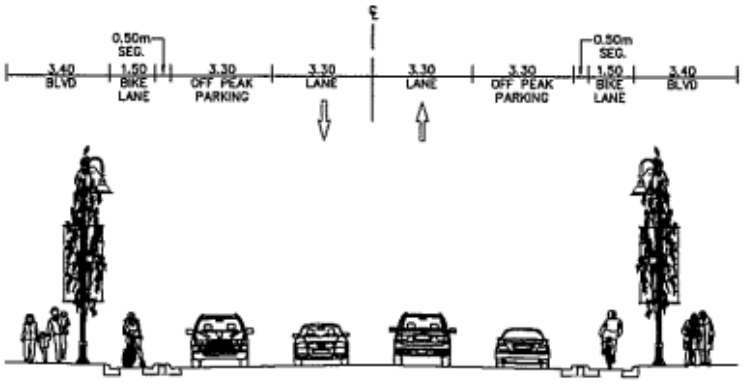
TRANSITIONAL 4

Alternative Transitional 4 has a 24-metre right-of-way with two traffic lanes. An on-street parking lane / sharrow for cyclists is provided on each side. 5.2-metre wide boulevards with 1.5-metre wide sidewalks are provided.

6.3.2 Alternatives to be Eliminated

TRANSITIONAL 5

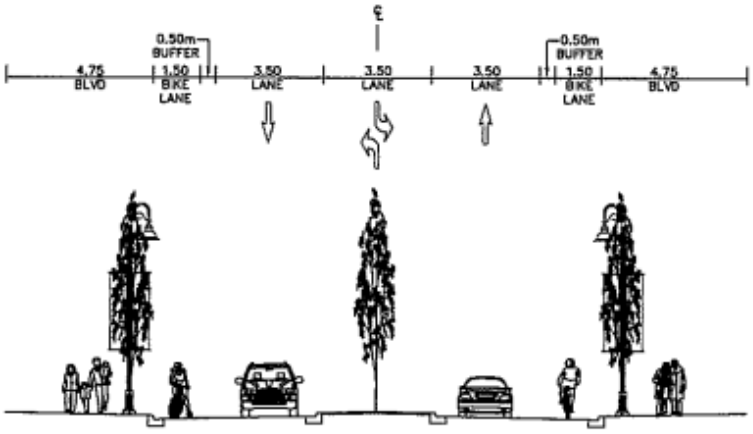
Alternative Transitional 5 has a 24-metre right-of-way with two lanes of traffic in addition to two off-peak parking lanes. Segregated bike lanes are also provided, with a 0.5-metre wide raised buffer from traffic and parked vehicles. This alternative was not carried forward due to its focus on vehicle traffic; as the Transitional section of the Burnhamthorpe Road corridor is not expected to have high volumes of traffic, it is not necessary to provide four lanes of peak-hour traffic. Priority should be given to on-street parking to support commercial development along this section of the corridor.



URBAN STREET
OFF-PEAK PARKING LANES
WITH SEGREGATED BIKE LANES
24 METRES

TRANSITIONAL 6

Alternative Transitional 6 has a 24-metre right of way and includes two lanes of traffic, buffered bike lanes, and a central median that allows for left turn lanes at intersections where necessary. With the Transitional section's expected lower volume of traffic, it will not be necessary to accommodate left turn lanes. This alternative was not carried forward.



URBAN STREET
TWO WAY LEFT TURN
WITH BUFFERED BIKE LANES
24 METRES

7 Evaluation of Road Design Alternatives

7.1 Evaluation Strategy

Through public and stakeholder input, a set of Evaluation Criteria was developed. All alternative designs developed for the Burnhamthorpe Road corridor, and deemed to be reasonable alternatives, were assessed against these criteria to define a preliminary Preferred Design for the corridor.

The Evaluation Criteria were divided into the following categories:

- Operational;
- Sustainable Transportation;
- Natural Environment;
- Urban Design;
- Socio-economic Environmental;
- Cultural Environment and,
- Financial

A set of alternatives was developed for each of the three defined sections of Burnhamthorpe Road: the Core section, the Transitional sections, and the West section. The three sections correspond with distinctly different land use designations and projected future population and employment densities as directed by the NOESP. Alternatives within each of the three sections were evaluated separately to ensure compatibility with future adjacent land uses.

Under each criterion, each of the alternatives was given a score from 0 to 3 as follows:

3 points: The alternative best addresses the criterion.

2 points: As compared with the alternative that best addresses the criterion, the alternative is expected result in marginally less positive impacts.

1 point: As compared with the alternative that best addresses the criterion; the alternative is expected to result in significantly less positive impacts.

0 points: The alternative is expected to result in minimal positive impacts, or significant negative impacts, as compared with the alternative that best addresses the criterion.

Alternatives were scored comparatively. Under each criterion, at least one alternative was given a “perfect” score (3 points); the other alternatives were scored based on their net negative impacts as compared with the best performing alternative(s) under the criterion. If all alternatives were found to perform equally under a criterion, all were given a perfect score of 3 points.

Score subtotals were calculated under each Evaluation Criteria category for each of the alternatives, and subtotals were added to arrive at total scores. The highest scoring alternatives for each of the three sections of the corridor were carried forward as the Preliminary Preferred Design.

The evaluation process and Preferred Design were presented to the Technical Agencies Committee, the Stakeholder's Group, and at the second and final Public Information Centre. It was determined through this consultation process that no modifications were required to the Preliminary Preferred Design. The design was carried forward as the final Preferred Design. A detailed description of the Preferred Design is available within Section 8 of this report.

7.2 Evaluation Results

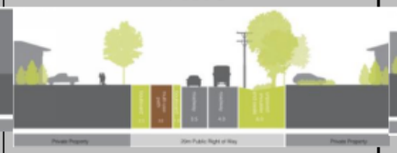
The following tables document the evaluation of alternatives for the West, Core, and Transitional sections of the Burnhamthorpe Road corridor.

7.2.1 West Section

Table 7-1 presents the evaluation of the West section alternatives. The alternatives West 1, West 2, West 3, and West 4 are evaluated using the methodology above.

Table 7-1. Evaluation of the West section alternatives

	Criteria	Description / Considerations	West 1	West 2	West 3	West 4
						
OPERATIONAL	**Right-of-Way (ROW) Width Range**	Compliance with the North Oakville East Secondary Plan OMB settlement: ROW "*will be kept to a minimum and shall not exceed a maximum of 24 metres and more typically will have a ROW of 20 metres*"	●	●	●	◔
	Traffic Calming	Slow vehicle speeds encouraged through traffic calming measures such as street trees, on-street parking, and narrow traffic lanes	○	◔	◗	●
	Number of Lanes	Number of traffic lanes sufficient to accommodate projected traffic volumes through 2031	●	●	●	●
	Parking	Sufficient on-street parking to support expected scale of commercial development	○	●	○	●
	Utilities / Stormwater Management	Right-of-way is able to accommodate all necessary servicing	○	●	◗	●
	SUMMARY	**TOTAL POINTS (maximum 15)**	**6**	**14**	**8**	**14**
SUSTAINABLE TRANSPORTATION	**Cycling**	Safe, dedicated cycling facilities provided that minimize interference/conflict with vehicles and pedestrians	○	○	◔	●
	Pedestrians	Attractive, safe and inviting environment for pedestrians with minimized walking distances to key community features	○	●	◗	●
	Transit	Accommodate planned transit use for future Burnhamthorpe Road as a Transit Corridor with service frequency of 10 to 15 minutes	○	●	◗	●
	Accessibility	Design provides universal access: minimal slopes, uninhibited access to transit stops, frequent pedestrian street crossings, and sidewalks wide enough for two wheelchairs to pass	○	◔	◗	●
	SUMMARY	**TOTAL POINTS (maximum 12)**	**0**	**8**	**5**	**12**

	Criteria	Description / Considerations	West 1	West 2	West 3	West 4
						
NATURAL ENVIRONMENT	**Natural Heritage Features and Designated Areas**	Minimal impacts on woodlots, wetlands, valleylands, and designated or protected environmental areas	●	◗	◕	◗
	Wildlife and Wildlife Habitat	Minimal impact on terrestrial and aquatic species	●	◗	◕	◗
	Urban Forestry	Design allows enough space for healthy, mature trees to thrive within the right-of-way	●	◗	◕	◗
	Natural Hazards	Design minimizes diversion of watercourses	●	◗	◕	◗
	SUMMARY	**TOTAL POINTS (maximum 12)**	**12**	**4**	**8**	**4**
URBAN DESIGN	**Land Use Designations / Context**	Appropriate design for the planned future land use contexts along the corridor	○	●	◗	●
	Planned Building Scale & Orientation	Design and right-of-way width is appropriate for the size, density and height of future building	◗	◗	●	◕
	Boulevard Treatment	Road design can accommodate appropriate landscaping, street furniture and other amenities	○	◕	◗	●
	SUMMARY	**TOTAL POINTS (maximum 9)**	**1**	**6**	**5**	**8**
SOCIO-ECONOMIC	**Property**	Minimal displacement or disruption to adjacent properties	●	●	●	◕
	Community Features / Character	Design promotes Burnhamthorpe Road as a "destination" while respecting its historical past.	◕	○	●	◕
	Air Quality	Manageable impacts to local air quality	●	●	●	●
	SUMMARY	**TOTAL POINTS (maximum 9)**	**8**	**6**	**9**	**7**

	Criteria	Description / Considerations	West 1	West 2	West 3	West 4
						
CULTURAL ENVIRONMENT	Archaeology	Minimal impacts on identified archaeological resources				
	Built Heritage	Minimal impacts to built heritage resources or listed buildings				
	Cultural Heritage Landscape	Minimal impacts to the cultural heritage landscape				
	SUMMARY	TOTAL POINTS (maximum 9)	9	6	7	6
FINANCIAL	Capital Costs	Low construction costs				
	Operational Costs	Low operational and maintenance costs				
	Property Costs	Minimal costs associated with property acquisition				
	SUMMARY	TOTAL POINTS (maximum 9)	9	5	7	4
TOTAL POINTS (maximum 75)			45	49	49	55
TOTAL PERCENTAGE SCORE			 60.0%	 65.3%	 65.3%	 73.3%

7.2.2 Core Section

Table 7-2 presents the evaluation of the Core section alternatives. The alternatives Core 1, Core 2, Core 3, and Core 4 were carried forward to evaluation.

The alternatives Core 5 through Core 9 were eliminated early in the process due to their failure to meet the needs of the Burnhamthorpe Road corridor as the NOESP is implemented and the surrounding areas evolve. Justification for eliminating each of these alternatives was addressed previously within Section 6.2.2.

Table 7-2. Evaluation of the Core section alternatives

	Criteria	Description / Considerations	Core 1	Core 2	Core 3	Core 4
						
OPERATIONAL	**Right-of-Way (ROW) Width Range**	Compliance with the North Oakville East Secondary Plan OMB settlement: ROW "*will be kept to a minimum and shall not exceed a maximum of 24 metres and more typically will have a ROW of 20 metres*"				
	Traffic Calming	Slow vehicle speeds encouraged through traffic calming measures such as street trees, on-street parking, and narrow traffic lanes				
	Number of Lanes	Number of traffic lanes sufficient to accommodate projected traffic volumes through 2031				
	Parking	Sufficient on-street parking to support expected scale of commercial development				
	Utilities / Stormwater Management	Right-of-way is able to accommodate all necessary servicing				
	SUMMARY	**TOTAL POINTS (maximum 15)**	**14**	**15**	**10**	**14**
SUSTAINABLE TRANSPORTATION	**Cycling**	Safe, dedicated cycling facilities provided that minimize interference/conflict with vehicles and pedestrians				
	Pedestrians	Attractive, safe and inviting environment for pedestrians with minimized walking distances to key community features				
	Transit	Accommodate planned transit use for future Burnhamthorpe Road as a Transit Corridor with service frequency of 10 to 15 minutes				
	Accessibility	Design provides universal access: minimal slopes, uninhibited access to transit stops, frequent pedestrian street crossings, and sidewalks wide enough for two wheelchairs to pass				
	SUMMARY	**TOTAL POINTS (maximum 12)**	**10**	**8**	**12**	**10**

	Criteria	Description / Considerations	Core 1	Core 2	Core 3	Core 4
						
NATURAL ENVIRONMENT	**Natural Heritage Features and Designated Areas**	Minimal impacts on woodlots, wetlands, valleylands, and designated or protected environmental areas				
	Wildlife and Wildlife Habitat	Minimal impact on terrestrial and aquatic species				
	Urban Forestry	Design allows enough space for healthy, mature trees to thrive within the right-of-way				
	Natural Hazards	Design minimizes diversion of watercourses				
	SUMMARY	**TOTAL POINTS (maximum 12)**	**11**	**11**	**12**	**11**
URBAN DESIGN	**Land Use Designations / Context**	Appropriate design for the planned future land use contexts along the corridor				
	Planned Building Scale & Orientation	Design and right-of-way width is appropriate for the size, density and height of future buildings				
	Boulevard Treatment	Road design can accommodate appropriate landscaping, street furniture and other amenities				
	SUMMARY	**TOTAL POINTS (maximum 9)**	**8**	**6**	**5**	**6**
SOCIO-ECONOMIC	**Property**	Minimal displacement or disruption to adjacent properties				
	Community Features / Character	Design promotes Burnhamthorpe Road as a "destination" while respecting its historical past.				
	Air Quality	Manageable impacts to local air quality				
	SUMMARY	**TOTAL POINTS (maximum 9)**	**9**	**9**	**8**	**6**

	Criteria	Description / Considerations	Core 1	Core 2	Core 3	Core 4
CULTURAL ENVIRONMENT	**Archaeology**	Minimal impacts on identified archaeological resources				
	Built Heritage	Minimal impacts to built heritage resources or listed buildings				
	Cultural Heritage Landscape	Minimal impacts to the cultural heritage landscape				
	SUMMARY	**TOTAL POINTS (maximum 9)**	**9**	**9**	**9**	**8**
FINANCIAL	**Capital Costs**	Low construction costs				
	Operational Costs	Low operational and maintenance costs				
	Property Costs	Minimal costs associated with property acquisition				
	SUMMARY	**TOTAL POINTS (maximum 9)**	**8**	**8**	**9**	**6**
TOTAL POINTS (maximum75)			**69**	**66**	**65**	**61**
TOTAL PERCENTAGE SCORE			 **92.0%**	 **88.0%**	 **86.7%**	 **81.3%**

7.2.3 Transitional Section

Table 6-3 presents the evaluation of the Transitional section alternatives. The alternatives Transitional 1, Transitional 2, Transitional 3, and Transitional 4 were carried forward to evaluation.

The alternatives Transitional 5 and Transitional 6 were eliminated early in the process due to their failure to meet the needs of the Burnhamthorpe Road corridor as the NOESP is implemented and the surrounding areas evolve. Justification for eliminating each of these alternatives is included within Section 6.3.2.

Table 7-3. Evaluation of the Transitional section alternatives

	Criteria	Description / Considerations	Transitional 1	Transitional 2	Transitional 3	Transitional 4
						
OPERATIONAL	**Right-of-Way (ROW) Width Range**	Compliance with the North Oakville East Secondary Plan OMB settlement: ROW "*will be kept to a minimum and shall not exceed a maximum of 24 metres and more typically will have a ROW of 20 metres*"				
	Traffic Calming	Slow vehicle speeds encouraged through traffic calming measures such as street trees, on-street parking, and narrow traffic lanes				
	Number of Lanes	Number of traffic lanes sufficient to accommodate projected traffic volumes through 2031				
	Parking	Sufficient on-street parking to support expected scale of commercial development				
	Utilities / Stormwater Management	Right-of-way is able to accommodate all necessary servicing				
	SUMMARY	**TOTAL POINTS (maximum 15)**	**15**	**14**	**14**	**14**
SUSTAINABLE TRANSPORTATION	**Cycling**	Safe, dedicated cycling facilities provided that minimize interference/conflict with vehicles and pedestrians				
	Pedestrians	Attractive, safe and inviting environment for pedestrians with minimized walking distances to key community features				
	Transit	Accommodate planned transit use for future Burnhamthorpe Road as a Transit Corridor with service frequency of 10 to 15 minutes				
	Accessibility	Design provides universal access: minimal slopes, uninhibited access to transit stops, frequent pedestrian street crossings, and sidewalks wide enough for two wheelchairs to pass				
	SUMMARY	**TOTAL POINTS (maximum 12)**	**9**	**11**	**8**	**9**

	Criteria	Description / Considerations	Transitional 1	Transitional 2	Transitional 3	Transitional 4
						
NATURAL ENVIRONMENT	**Natural Heritage Features and Designated Areas**	Minimal impacts on woodlots, wetlands, valleylands, and designated or protected environmental areas				
	Wildlife and Wildlife Habitat	Minimal impact on terrestrial and aquatic species				
	Urban Forestry	Design allows enough space for healthy, mature trees to thrive within the right-of-way				
	Natural Hazards	Design minimizes diversion of watercourses				
	SUMMARY	**TOTAL POINTS (maximum 12)**	**12**	**11**	**11**	**12**
URBAN DESIGN	**Land Use Designations / Context**	Appropriate design for the planned future land use contexts along the corridor				
	Planned Building Scale & Orientation	Design and right-of-way width is appropriate for the size, density and height of future buildings				
	Boulevard Treatment	Road design can accommodate appropriate landscaping, street furniture and other amenities				
	SUMMARY	**TOTAL POINTS (out of 9)**	**7**	**8**	**4**	**7**
SOCIO-ECONOMIC	**Property**	Minimal displacement or disruption to adjacent properties				
	Community Features / Character	Design promotes Burnhamthorpe Road as a "destination" while respecting its historical past.				
	Air Quality	Manageable impacts to local air quality				
	SUMMARY	**TOTAL POINTS (maximum 9)**	**7**	**8**	**8**	**6**

	Criteria	Description / Considerations	Transitional 1	Transitional 2	Transitional 3	Transitional 4
						
CULTURAL ENVIRONMENT	**Archaeology**	Minimal impacts on identified archaeological resources				
	Built Heritage	Minimal impacts to built heritage resources or listed buildings				
	Cultural Heritage Landscape	Minimal impacts to the cultural heritage landscape				
	SUMMARY	**TOTAL POINTS (maximum 9)**	**9**	**8**	**8**	**8**
FINANCIAL	**Capital Costs**	Low construction costs				
	Operational Costs	Low operational and maintenance costs				
	Property Costs	Minimal costs associated with property acquisition				
	SUMMARY	**TOTAL POINTS (maximum 9)**	**9**	**6**	**6**	**7**
TOTAL POINTS (maximum 75)			**68**	**66**	**59**	**63**
TOTAL PERCENTAGE SCORE			 **90.7%**	 **88.0%**	 **78.7%**	 **84.0%**

8 Preferred Design

The results of the evaluation of alternatives identified a Preferred Design for the Burnhamthorpe Road corridor. In the West section, Alternative West 4 is preferred, which includes "urban" road features such as wide boulevards, on-street parking with bump outs, and buffered bike lanes. Alternative Core 1 is preferred within the Trafalgar Urban Core, which similarly includes wide boulevards and buffered bike lanes. In the Transitional sections, Alternative Transitional 1 received the highest score; Transitional 1 provides wide boulevards and on-street parking, but uses a sharrow rather than a dedicated cycling lane. Transitional 2 received a marginally lower score than Transitional 1, but provided greater compatibility with the preferred Core 1 and West 4 alternatives due to its buffered bike lanes. Therefore, Transitional 2 was carried forward as part of the Preferred Design.

Project Team discussions revealed interest in applying weightings to the Evaluation Criteria categories to achieve better representation of categories deemed most important within each section of the corridor. Results of these weightings are shown within **Appendix E**.

While a variety of weighting scenarios were applied, stronger weightings were placed on categories that the Project Team identified as most important:

- In the West section, the Natural Environment, Cultural Environment, and Sustainable Transportation categories were deemed most important;
- In the Core and Transitional sections, the Urban Design, Sustainable Transportation, and Operational categories were deemed most important.

Weightings did not result in significant changes to the results of the evaluation of West section and Core section alternatives; it was clarified further through this process that West 4 and Core 1 are preferred. However, within the Transitional sections, weightings favouring the Sustainable Transportation and Urban Design categories resulted in a higher score for alternative Transitional 2. The selection of Transitional 2 allows for enhanced continuity along the entire length of the corridor; buffered bike lanes would serve as a common element defining Burnhamthorpe Road as a Character Road that promotes active modes of transportation.

Figure 7-1 on the following page illustrates how the Preferred Design transitions through the West section, Core section, and Transitional sections. The Preferred Design was presented as preliminary for stakeholder and public input during the final round of consultation activities, and it was determined through the consultation process that no modifications to the design were necessary in the final stages of the Burnhamthorpe Road Character Study.

West section

Transitional section

Core section

Transitional section

HIGHWAY 407

BURNHAMTHORPE ROAD

SIXTH LINE

TRAFALGAR ROAD

NORTH OAKVILLE TRANSPORTATION CORRIDOR

DUNDAS STREET

Urban Street
Bump Out Parking with Dedicated Bike Lanes
22 metres

Urban Street
Bump Out Parking Lanes with Buffered Bike Lanes
24 metres

Urban Street
Off-Peak Parking Lanes with Buffered Bike Lanes
24 metres

Urban Street
Bump Out Parking Lanes with Buffered Bike Lanes
24 metres

Figure 8-1. Preferred Design

8.1 Major Features of the Recommended Plan

8.1.1 Design Criteria

The proposed design criteria, shown in **Table 7-1** below, are based on a design speed of 60 km/h, as follows:

Table 8-1. Design Criteria

BURNHAMTHORPE ROAD FROM SIXTEEN MILE CREEK TO WILLIAM HALTON PARKWAY		
	DESIGN STANDARDS	**ACTUAL PROPOSED**
HIGHWAY CLASSIFICATION	UCU	UCU
NUMBER OF LANES	2	2
DESIGN SPEED (km/h)	60	60
POSTED SPEED (km/h)	50	50
MINIMUM STOPPING SIGHT DISTANCE (m)	75 - 85	85
MINIMUM 'K' FACTOR		
- Crest	10 - 13	13
- Sag (comfort control)	8 - 9	9
GRADES MAXIMUM	6.0%	4.0%
MINIMUM RADIUS (m)	185	80[1]
LANE WIDTH - through (m)	3.3	3.3
R.O.W. WIDTH	max. 24.0	24.0[2]

NOTES:
1. Minimum radius occurs at the intersection with William Halton Parkway. Posted speed should be 40 km/h at intersection approach. Proposed centreline radius is acceptable for 40 km/h design speed with reverse crown (reference: TAC Geometric Design Guide Table 2.1.2.4)
2. R.O.W. Width is 22.0m in West Section.

8.1.2 Horizontal Alignment

The horizontal alignment of Burnhamthorpe Road is essentially tangential, as is the existing roadway within the Study Limits. The alignment matches into the proposed William Halton Parkway on either side of Neyagawa Boulevard and near Ninth Line. Halton Region is currently undertaking the detail design of William Halton Parkway and the intersection designs have been coordinated between the two projects. It should be noted that the Region has not completed the detail design so there may be further adjustments to the location and configuration of the Burnhamthorpe Road – William Halton Parkway intersections.

The proposed alignment is shown in detail on the preliminary design drawings within **Appendix F** (Sheets 1 – 20).

8.1.3 Vertical Alignment

The vertical alignment for Burnhamthorpe Road was not developed, but it will be refined in detail design, based on the following criteria:

- Meet the design criteria for vertical alignment specified above to protect existing topography;
- Match the existing arterial road profiles at Sixth Line and Trafalgar Road;
- Match the proposed William Halton Parkway centreline profile;
- Minimize depth of flooding for Regional Flood scenario; and,
- Provide for major overland flows

8.1.4 Typical Cross Section

The typical cross sections proposed for the West, Transition and Core areas are illustrated in **Figure 8-1.** Key elements of the proposed Burnhamthorpe Road cross-sections include the following:

- Concrete curb and gutter;
- Two 3.30 m through lanes;
- Two 1.5 m bike lanes;
- Hard surface and/or landscaped boulevards;
- 3.0 m to 3.25 m left-turn lanes; and,
- Two 1.5 m concrete sidewalks.

On-street parking bays will be provided, where appropriate, in the West Section and in the Transition Sections. Within the Core Section, off-peak parking will be provided between the through traffic and the bike lanes. The bike lanes in the West and Transition Sections will be located between the through lanes and the bump-out parking bays. The location and configuration of the bump-out parking bays are shown schematically in Sheets 1 – 20 (**Appendix F**); the actual locations will be determined during detail design or adjacent development applications.

The sidewalks and street furniture location and materials should be designed in accordance with the Town's "Livable by Design" urban design manual (April 2014) and other relevant planning documents.

8.1.5 Intersections and Side Roads

The road pattern for the North Oakville community has not been fully determined at this time. The Burnhamthorpe Road plans shown on Sheets 1 – 20 (**Appendix F**) illustrate the current road network but this will be refined as development applications are received and reviewed by the Town of Oakville.

Intersection designs have been developed to provide an acceptable level of service at each proposed intersection. Turning lane lengths are based on the Ontario Geometric Design Standards Manual for a 60 km/h design, and consist of a taper and storage lane components in some locations. Storage lengths were calculated by MMM, and are provided in the Transportation Analysis (**Appendix B**). The proposed turning lanes and corresponding storage lengths are shown on the preliminary design drawings (Sheets 1 – 20 within **Appendix F**).

It should be noted that the preliminary road network will compromise the tapers and storage lengths. Examples include the east leg of the Sixth Line intersection and the east and west legs of the Trafalgar Road intersection. The intersection spacing in these locations should be reviewed by the town as development proceeds.

The design of Burnhamthorpe Road intersections at William Halton Parkway will need to be closely co-ordinated with the detail design of William Halton Parkway by the Region of Halton.

8.1.6 Private Entrances

Due to the planned developments adjacent to the Burnhamthorpe Road corridor, most existing driveway entrances will be removed and property access will be provided through the future local roads intersecting Burnhamthorpe Road. Access to individual properties will be reviewed during detailed design to determine if full movement entrances can be provided.

8.1.7 Pavement Design

A detailed geotechnical study and pavement design report will be required during the detail design stage. For estimating purposes, the following pavement design was used:

- 40 mm HL3, High Stability (PGAC 64-22)
- 100 mm HDBC (PGAC 64-22)
- 150mm Granular 'A'
- 350 mm Granular 'B'

The pavement structure noted above is as outlined in the town's Design Standard 7-20 for avenues and minor arterial roads. A detailed geotechnical study and pavement design report will need to be completed during detailed design.

8.1.8 Storm Drainage

The North Oakville Creeks Subwatershed Study, 2006 (NOCSS) conducted by TSH et al. characterized the existing hydrology and provided recommendations for stormwater management requirements. The May 2012 Environmental Implementation Report was prepared by a team led by Stonybrook Consulting Inc. for the Joshua's Creek tributaries and the Mattamy Lands. An Environmental Implementation Report for the Lower West and East Morrison Creeks was prepared by Urbantech Consulting et al (November 2012) for Sixth Line Corporation.

There are three watersheds (Joshua's Creek, East Morrison Creek, and Sixteen Mile Creek), which are currently conveyed by seven culvert crossings located within the study limits. Proposed improvements of Burnhamthorpe Road must adhere to the fundamental objectives of the watershed management strategies of each watershed described in NOCSS.

As Burnhamthorpe Road is reconstructed into an urban arterial road, the existing culvert crossings will be upgraded/modified or converted to storm sewer outlets, discharging to existing watercourses. In future developments, the external areas should utilize appropriate stormwater management (SWM) measures to control the proposed peak flow rates to existing levels, as per Regional and town standards. The external areas will generate runoff controlled to the existing release rate, conveyed by proposed storm sewers along Burnhamthorpe Road and ultimately connecting to the upgraded culvert crossings or proposed outlet pipes.

8.1.9 Utilities

It is anticipated that all utilities located within the Burnhamthorpe Road right-of-way will need to be relocated or buried. Given that the nature of Burnhamthorpe Road will be changing from rural to urban, it is expected that the aerial utilities will be buried as development proceeds along the corridor. Determination of the utility relocation requirements will occur during detailed design.

Oakville Hydro

The reconstruction of Burnhamthorpe Road will require relocation of Oakville Hydro's pole line. Consideration should be given to placing the hydro lines underground.

Bell Canada

Bell Canada has aerial lines on the Oakville Hydro poles along Burnhamthorpe Road. It is anticipated that all Bell services will be buried as redevelopment of the corridor proceeds.

Union Gas

Union Gas does not currently have any services along Burnhamthorpe Road. As redevelopment proceeds, it is expected that Union Gas will be seeking permission to place their plant within the Burnhamthorpe Road right-of-way.

Regional Watermain

The Regional Municipality of Halton will construct a new watermain and sanitary sewer on Burnhamthorpe Road as part of the proposed reconstruction. The location of the watermains and sanitary sewers will be determined during detailed design.

Utility relocations are to be confirmed during the detail design phase.

8.1.10 Property Requirements

The Region of Halton currently owns a basic 20 m right-of-way. As sections of William Halton Parkway are constructed, it is expected that the Region will transfer the ownership of the Burnhamthorpe Road road allowance to the Town at no cost.

Lands for the widened Burnhamthorpe Road right-of-way (22.0m in the West section; 24.0m in the Transition and Core areas) will be acquired from the adjacent landowners as part of the redevelopment application process, where possible, at no cost to the Town.

Preliminary property requirements are shown on Sheets 1 – 20 (**Appendix F**). It should be noted that the property plans shown reflect the preliminary road network within the North Oakville lands and are subject to change.

Property requirements will be confirmed during the detail design phase of each adjacent development.

8.1.11 Traffic Signals and Illumination

Traffic signals will be upgraded at the existing Sixth Line and Trafalgar Road intersections at Burnhamthorpe Road to accommodate the intersection reconfigurations. New traffic signals will be installed at the proposed William Halton Parkway intersections. Provisions will be made to accommodate future signals at other key intersections where warrants are demonstrated by the adjacent developers.

Full illumination will be provided along Burnhamthorpe Road.

8.1.12 Construction Staging and Phasing

The reconstruction of Burnhamthorpe Road will be undertaken over many years as development proceeds. Each developer will need to develop construction staging plans to connect the widened roadway back to the existing Burnhamthorpe Road section. The transitions should be designed to current town and Transportation Association of Canada standards.

8.1.13 Preliminary Cost Estimate

The preliminary cost estimate for this project, not including utility relocations and land acquisition is $13.2 Million. A breakdown of the cost estimate is provided in **Appendix G**.

9 Environmental Effects and Proposed Mitigation and Monitoring Measures

9.1 Environmental Effects

9.1.1 Natural Environment

9.1.1.1 Aquatic Ecosystems

Effects

The Burnhamthorpe Road Character Road study corridor is bounded by Sixteen Mile Creek to the west, and several branches of Morrison Creek and Joshua's Creek cross Burnhamthorpe at seven locations along the corridor. Construction activities may impact downstream aquatic habitats.

Mitigation

A sediment and erosion control plan will be prepared during each detailed design stage and submitted to the appropriate agencies for approval. The plan will detail constraints to construction and other provisions to ensure protection of downstream watercourses. The sediment and erosion control plan will be in accordance with Conservation Halton (CH) guidelines and will be submitted to CH for review. Prior to construction, control measures including rock check dams, silt fencing and straw bales may be installed along the limits of grading to reduce the potential for erosion. During construction, these systems should be inspected regularly and cleaned / repaired as necessary.

9.1.1.2 Terrestrial Ecosystems

Effects

Within the right-of-way, vegetation between residential properties adjacent to inactive and active agricultural fields consists of immature native and non-native hedgerows disturbed from past and present agricultural activities. Some significant mature trees within the hedgerows appear to be remnants from a larger forest community that was removed for agriculture.

Vegetation is dense along the edges of the watercourses that run adjacent to or cross Burnhamthorpe Road. Along frontages of rural residential properties, vegetation consists mostly of a mixture of ornamental, native and non-native trees; the majority of these trees are immature to semi-mature.

Higher concentrations of native species are located adjacent to Morrison Creek. Vegetation is less dense adjacent to farm fields or within frontage of residential, institutional and commercial properties. A majority of vegetation within the right of way has either been planted, established by seed or established naturally, or are remnants of hedgerows or forests and ranging in size between 5 to 100cm DBH and 4 to 20m in height. Non-native and invasive Manitoba Maple, Norway Maple and Buckthorn were observed with the right of way and regionally rare Eastern

Red Cedar was observed west of Neyagawa Boulevard. No endangered species were observed.

Between the terminus of Burnhamthorpe Road at the 16 Mile Creek watershed and roughly 470 metres west of Neyagawa Boulevard, vegetation is primarily native deciduous, predominantly young trees with some mature specimens ranging in size between 10 to 100 cm DBH and 4 to 20 m in height. Species consist of an abundance of Ash (*Fraxinus spp.*), Bur Oak (*Quercus macrocarpa*), Bitternut Hickory (*Carya cordiformis*) and Manitoba Maple (*Acer negundo*). To a lesser extent, there is Elm (*Ulmus spp.*), Norway Spruce (*Picea abies*), Scots Pine (*Pinus slyvestris*), Horsechesnut (*Aesculus hippocastanum*), Eastern Red Cedar (*Juniperus virginiana*), Buckthorn (*Rhamnus cathartica*), Poplar (*Populus spp.*), Red Oak (*Quercus rubra*), Silver Maple (*Acer saccharinum*) and Alder (*Alnus spp.*).

It is expected that vegetation will be impacted when the Preferred Design for the Burnhamthorpe Road corridor is implemented.

Construction activities will result in exposed and compacted soils during surface grading. Potential impacts include erosion and sediment transport.

Mitigation

While it will not be feasible to retain a majority of the vegetation within the right of way, there are trees that should be given consideration to be preserved. Native trees in good condition should be preserved where feasible and incorporated into the road design as these trees will provide shade for pedestrians and a connection to the past history of the road. Vegetation within the Glenorchy Conservation Area and along the branches of Morrison Creek and watercourses should be preserved and impacts should be kept to a minimum. Regionally rare trees such as Eastern Red Cedar that were observed west of 4th Line to Sixteen Mile Creek should be preserved; should preservation not be feasible, transplanting should be considered. Finally, 40 significant trees in good condition were observed within the study corridor; priority should be placed on the preservation of these trees due to their ecological benefits. Trees recommended to be preserved are shown in the Tree Preservation Plans within **Appendix C**.

Mitigation measures for the preservation of trees and vegetation along the study corridor include possibly meandering proposed sidewalks around trees, construction of retaining walls or curbs to minimize the impacts of cut / fill within the critical root zones of trees, and transplanting of trees below 30 cm DBH. Additionally, invasive non-native species that have been observed within the study corridor, such as Buckthorn, should be removed where present in the road allowance. Within Natural Heritage System areas along the corridor, no on-street parking will be provided so as to minimize impacts to natural features. Further details regarding these proposed mitigation measures are included within **Appendix C**.

At the detail design stage, a landscape planting plan will be prepared for plantings within the boulevards. A sediment and erosion control plan will also be prepared during each detailed design stage and submitted to the appropriate agencies for approval. Permits will be required for any works within Conservation Halton's regulated areas.

9.1.2 Socio-Economics and Culture

9.1.2.1 Property

Effects

Currently, the section of Burnhamthorpe Road within the study area has a right-of-way of roughly 20 metres. While the Burnhamthorpe Road Character Study aimed to limit expansions to the right-of-way, the Preferred Design recommends a right-of-way ranging from 22 metres to 24 metres to accommodate adequate infrastructure for expected future traffic volumes and parking while providing attractive facilities for cyclists and pedestrians to promote active and sustainable forms of transportation. This increase in the right-of-way may require acquisition of privately owned land, although most of the required lands will be dedicated to the town during the redevelopment process.

Mitigation

Property purchases will be in accordance with Town of Oakville policy. Purchase of any lands from Infrastructure Ontario will require completion of the Infrastructure Ontario environmental screening process.

9.1.2.2 Noise

Effects

There are no residential noise receptors within the study limits that would be affected by the proposed roadway widening and reconstruction.

Mitigation

None required.

9.1.2.3 Air Quality

Effects

Construction activities are expected to result in localized effects to air quality due to the creation of dust and emissions from construction machinery.

Mitigation

Construction equipment should be required to be kept in good operating condition and any unnecessary idling will be avoided. The construction site manager will be responsible for preparing and implementing a mitigation strategy.

9.1.2.4 Cultural Heritage

Effects

The roadscape of Burnhamthorpe Road from Ninth Line to Regional Road 25 was identified as a Cultural Heritage Landscape by the New North Oakville Transportation Corridor and Crossing of Sixteen Mile Creek Class Environmental Assessment Study (NNOTC EA). During the public

and stakeholder consultation process for the Burnhamthorpe Road Character Study, the corridor's "rolling topography" was cited as having cultural value to the community. Additionally, some significant trees and regionally rare species are observed along the corridor and may have cultural heritage value.

Numerous historic farm complexes, barns, and residential properties along the study corridor are listed or designated under the *Ontario Heritage Act*. For example, the intersection of Burnhamthorpe Road and Ninth Line was once the location of the former Snider's Corners and a few buildings still remain.

Mitigation

The Preferred Design is not expected to impact any listed or designated heritage buildings, and impacts to heritage properties along the corridor will be kept to a minimum. Wherever possible, grading changes to should be kept to a minimum and the natural topography of the area should be preserved.

9.1.2.5 Archaeology

Effects

Reconstruction of Burnhamthorpe Road will disturb the existing road allowance plus 1.0 to 2.0m on either side of the property line. A number of archeological investigations have new undertakings with the NOESP area. There are no indications that there are known sites within or near the existing road allowances.

Mitigation

Archeological investigations should be undertaken in conjunction with the redevelopment of lands adjacent to Burnhamthorpe Road.

9.1.2.6 Utilities

Effects

It is anticipated that all existing utilities within the Burnhamthorpe Road right-of-way will need to be relocated to implement the future vision of Burnhamthorpe Road within the NOESP area. The determination of utility impacts and the relocation strategy will be identified during the detailed design. All utility information should be updated prior to construction to ensure that the data is accurate and to finalize the relocation requirements, as necessary.

Mitigation

The relocation of utilities and the installation of new utilities and municipal services will occur as redevelopment proceeds within the North Oakville lands.

9.1.2.7 Land Use and Urban Design

Effects

The Preferred Design is supportive of the North Oakville East Secondary Plan's land use designations along the Burnhamthorpe Road corridor. An urban street design will be carried through the entire corridor to support future urban development. The Preferred Design promotes active transportation with wide pedestrian boulevards and dedicated bike lanes along its entire length. Sidewalk widths, on-street parking and traffic lanes are scaled to the NOESP's land use designations and density of future development. Wide boulevards support planting of street trees to enhance urban design features and the pedestrian realm.

Mitigation

None required.

9.1.3 Transportation

9.1.3.1 Traffic

Effects

Traffic volumes along the Burnhamthorpe Road corridor are expected to increase significantly as the North Oakville East Secondary Plan is implemented and denser, more urban forms of development are constructed. The Preferred Design's traffic lanes, intersections, turning lanes, and on-street parking facilities were designed based on a Transportation Analysis that was conducted as part of this study (see **Appendix B**). It is therefore anticipated that the Preferred Design will adequately accommodate traffic into the future.

Mitigation

On-street parking lanes in the Trafalgar Urban Core, which is expected to have the highest traffic volumes, will be flexible. As no bump-outs are included within this section of the Preferred Design, parking lanes can be used as traffic lanes at peak hours.

9.1.3.2 Public Transportation

Effects

The Preferred Design is expected to have positive impacts on public transportation service. Traffic lanes will be wide enough to support bus traffic. Transit stops will be provided at each Neighbourhood Central Activity Node, and sidewalks will be provided along the entire length of the corridor for improved accessibility to transit stops. Parking laybys should be placed at least 30m from intersections to permit for side transit stops. The location of transit stops will be determined during detail design in consultation with Oakville Transit.

Mitigation

None required.

9.1.3.3 Pedestrians

Effects

The Preferred Design will enhance the pedestrian realm. Currently, no sidewalks are provided along the study corridor. The Preferred Design includes wide, continuous pedestrian boulevards along the entire corridor. Adequate space will be provided for street trees and shrubs to provide shade and microclimate regulation to improve pedestrian comfort. The higher density, urban forms of development allowed by the North Oakville East Secondary Plan will encourage greater pedestrian activity.

Mitigation

None required.

9.1.3.4 Cycling

Effects

The Preferred Design is expected to have positive effects for cyclists. Continuous dedicated bike lanes will be provided along the entire length of the corridor and will include a 0.5 metre painted buffer to improve cyclist safety. Boulevards should provide space for bicycle parking along the corridor.

Mitigation

None required.

9.2 Monitoring

During construction, the Town of Oakville will review the implementation of mitigation measures and key design features to confirm that they are consistent with the approved contract documents and with the commitments made to the approval agencies. All Oakville construction projects are subject to daily on-site inspection.

Table 9-1. Summary of Environment Effects, Proposed Mitigation and Monitoring

Factor	Environmental Issue	Anticipated Impact	Proposed Mitigation	Monitoring / Future Work / Contingency
Drainage	Surface runoff quantity and quality	Widening and urbanization of Burnhamthorpe Road will increase amount of impervious coverage, increasing runoff volume and mass loading of pollutants	Stormwater management (SWM) ponds for adjacent developments will be sized to accept roadway drainage. If storm sewers discharge into watercourses, oil grit separators will be required.	Monitor runoff quality to ensure SWM pond effectiveness.
Natural Environment	Fisheries and Aquatic Habitat	Introduction of contaminants from road construction near watercourses may occur. Potential release of construction related sediment into a watercourse. Temporary disruption to fish passage and water flows.	Whenever possible, complete in-stream works in the dry by isolating and dewatering the work area. Install erosion and sediment control measures includes silt fences, rock check dams and/or straw bales. Restore banks of realigned channels promptly	Obtain permits and approvals from CH and/or DFO. Inspect erosion and sediment control measures daily.
Natural Environment	Sediment and Erosion	Earth excavation of roadway	Design, installation and maintenance of appropriate sediment control measures during construction Revegetate exposed soils promptly. Minimize vegetation removals. Specify fuelling areas for construction equipment at least 30m from all watercourses.	Monitor erosion and sediment control measures on daily basis to ensure effectiveness.
Natural Environment	Terrestrial Habitat	Loss of vegetation, disturbance to bird nests, and loss of habitat to small animals	Use snow fence to protect drip line of all trees that are to remain. Use silt fence to delineate the extent of the construction work zone.	Inspect mitigation measures to ensure effectiveness and identify deficiencies.

Factor	Environmental Issue	Anticipated Impact	Proposed Mitigation	Monitoring / Future Work / Contingency
			All migratory bird nests and eggs are protected in accordance with the *Migratory Birds Convention Act* during the active nesting season (typically April 1 – July 15).	
Natural Environment	Vegetation	Clearing of trees and vegetation will be required to accommodate the urbanization of Burnhamthorpe Road.	All vegetation identified for removal should be assessed for nesting birds prior to removal. Trees that are to remain will be protected by erecting and maintaining a temporary snow fence for protection.	Individual landscape plans should be prepared for each redevelopment proposed adjacent to Burnhamthorpe Road.
Natural Environment	Natural Heritage System	Watercourses and Open Space areas crossing Burnhamthorpe Road to be protected.	Ensure that construction machinery does not enter watercourses or wooded areas. Stockpiles of construction materials to be placed at least 30m from any watercourse. Construction refuelling areas to be at least 30m from any watercourse.	Inspect mitigation measures to ensure effectiveness and identify deficiencies.
Traffic	Level of Service for vehicular traffic	Additional turn lanes at intersections will improve traffic operations	Traffic Impact Studies to confirm intersection configurations	Future Traffic Impact Studies associated with adjacent developments must confirm the intersection configurations, recognizing the number of through lanes in the Preferred Design
Utilities	Conflicts with existing utilities	Existing aerial utilities will be impacted by the Preferred Design as Burnhamthorpe Road is urbanized	Existing utilities within the proposed Burnhamthorpe Road right-of-way will need to be relocated / buried.	Determination of utility impacts and relocation strategy to be determined during detailed design. Utility information should be updated prior to construction to ensure data is accurate and to finalize relocation

Factor	Environmental Issue	Anticipated Impact	Proposed Mitigation	Monitoring / Future Work / Contingency
				requirements as needed.
Geotechnical	Reconstruction of Burnhamthorpe Road pavement structure	Existing asphalt and granulars to be removed, subgrade reshaped and new asphalt and granulars to be placed.	None.	Detailed geotechnical investigations and pavement designs to be undertaken as part of individual redevelopment of adjacent lands occurs to ensure that the new pavement can carry the anticipated traffic loading.
Land Use	Construction disturbances	Short term impacts during construction are expected and may include temporary lane closures.	Prepare appropriate traffic management plans. Follow town noise by-law and MOE protocols for noise. Reduce dust to greatest extent possible during construction.	Implement management plans and monitor to ensure effective mitigation of impacts during construction.
Archaeology	Loss of archaeological resources	Lands to be redeveloped adjacent to Burnhamthorpe Road will need to have at least a Stage 1 archaeological assessment (AA) undertaken. The AA should include the proposed widening of the Burnhamthorpe Road right-of-way.	Recommendations of licenced archaeologist should be implemented.	All areas of Burnhamthorpe Road right-of-way that are to be disturbed will be subject to Stage 1 AA.
Built Heritage and Cultural Landscapes	Disruption to existing built heritage and cultural landscape features	Three designated heritage features are located adjacent to Burnhamthorpe Road. Although they are not directly impacted, there will be indirect impacts associated with the redevelopment of the North Oakville lands.	Cultural heritage landscape documentation should be prepared in advance of construction activities to serve as a final record of the study corridor in general and of each designated heritage feature within the study limits.	Landscaping and urban design plans for Burnhamthorpe Road should be undertaken to provide an authentic representation of the corridor.
Noise	Increased noise levels due to road widening	Noise levels will increase due to road widening and construction	Noise assessments for possible noise mitigation for future developments will be required and will be the responsibility of the individual developers.	Assessment of construction noise and related mitigation measures will be completed during the detail design stage.

10 Conclusion

The Burnhamthorpe Road Character Study and Municipal Class Environment Assessment process results in a Preferred Design for the future Burnhamthorpe Road, from Ninth Line to Sixteen Mile Creek, that is consistent with the goals and policies of the North East Oakville Secondary Plan. The Preferred Design will support the corridor's expected future population growth, land uses, and urban design through the provision of safe and inviting facilities for pedestrians and cyclists, adequate boulevard space to support urban forestry, sufficient traffic capacity, and on-street parking to support emerging local businesses. The Preferred Design defines appropriate right-of-way widths along the corridor (22.0m in the West Section and 24.0m in the Transitional and Core Sections) to make the provision of this infrastructure possible while minimizing impacts to environmental features and privately owned property. Long-term implementation of the Preferred Design is expected, with lands being dedicated to the town as development along the corridor occurs.