

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JUNE 23, 2020
FROM:	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER
SUBJECT:	DINGMAN DRIVE EAST OF WELLINGTON ROAD TO THE HIGHWAY 401 OVERPASS AND AREA INTERSECTION IMPROVEMENTS ENVIRONMENTAL STUDY REPORT

RECOMMENDATION

That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, the following actions **BE TAKEN** with respect to the Dingman Drive East of Wellington Road to the Highway 401 Overpass and Area Intersection Improvements Environmental Study Report:

- (a) Dingman Drive Improvements Schedule “C” Municipal Class Environmental Assessment Study **BE ACCEPTED**;
- (b) A Notice of Study Completion for the Project **BE FILED** with the Municipal Clerk; and,
- (c) The Environmental Study Report **BE PLACED** on the public record for a 30 day review period.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
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- Civic Works Committee - June 19, 2012- London 2030 Transportation Master Plan
- Civic Works Committee - September 7, 2016 - London ON Bikes Cycling Master Plan
- Strategic Priorities and Policy Committee – May 6, 2019 – Approval of 2019 Development Charges By-Law and DC Background Study
- Civic Works Committee – February 5, 2019 – Dingman Drive East of Wellington Road to Highway 401 and Area Intersections Improvements Environmental Assessment Appointment of Consulting Engineer

COUNCIL’S 2019-2023 STRATEGIC PLAN

The following report supports the Strategic Plan through the strategic focus area of Building a Sustainable City by building new transportation infrastructure as London grows. The improvements to the Dingman Drive corridor will enhance safe and provide convenient mobility choices for transit riders, drivers, pedestrians and cyclists.

BACKGROUND

Purpose

This report provides an overview of the Municipal Class Environmental Assessment (EA) that was completed and seeks approval to finalize the study. The study identifies improvements to Dingman Drive, east of Wellington Road to the Highway 401 overpass, and improvements to the Dingman Drive and White Oak Road intersection. These improvements can be phased and implemented as the need arises from area developments.

Background

The City of London continues to develop and grow. To accommodate this growth, new infrastructure is required that recognizes the capacity needs of planned growth. Dingman Drive is an east-west arterial roadway and currently consists of a two-lane rural cross section with no sidewalks or cycling facilities.

This corridor improvement project was identified as a priority in the 2019 Transportation Development Charges Background Study due to the future redevelopment that is anticipated near Wellington Road and Highway 401. The anticipated developments will increase traffic and turning movements in the area significantly.

The implementation of complete streets improvements is important to create equitable access to the area. The improvements identified in this study will create an opportunity to enhance and improve the features of the roadway and to accommodate existing and future traffic demands, including active transportation from expected development and planning for future transit. The improvements will improve the overall transportation network and provide better connectivity to adjacent communities by following the City's Complete Streets Design Manual approach. The EA study also identifies improvements to the nearby intersection of Dingman Drive and White Oak Road.

The study area is located in the southern area of the City of London. It extends approximately 1.2 km along Dingman Drive from 150 m east of Wellington Road to the east of the Highway 401 overpass (Phase 1). The study area also includes the intersection of Dingman Drive and White Oak Road (Phase 2). See Figure 1, the map of the project area below.



Figure 1: EA Study Area Map

Related Initiatives

The London Plan

The London Plan, which encompasses the objectives and policies for the City's short and long-term physical land development, classifies this portion of Dingman Drive as a Civic Boulevard, which places an emphasis on a balanced pedestrian, bicycle, transit, and traffic environment. Civic Boulevards are characterized as accommodating on

street parking, cycling facilities, turn lanes, planted medians, and landscaped features (grass boulevards, planters and street trees).

Development Charges Study

The Dingman Drive east corridor was identified as a priority due to the impending London Gateway and other future developments near Wellington Road and the Highway 401, which will increase traffic in the area significantly.

Complete Streets Design Manual

By following the Complete Streets approach, there is an opportunity to improve Dingman Drive and the White Oak Road and Dingman Drive intersection to accommodate the existing and future traffic demand while also providing new pedestrian and cycling routes that are not currently available. This will result in better connectivity to adjacent neighbourhoods for the overall road network.

Cycling Master Plan

Within the study area, this plan recommends improvements to the cycling network with in-boulevard cycling facilities, a potential connection to the existing bike lanes on White Oak Road, and connectivity to the multi-use pathway at the Murray Marr Stormwater Management Facility west of the Highway 401 overpass.

Strategic Plan

The City of London's Strategic Plan (2019-2023) sets out a broad direction for the future of London. As part of the City's initiative for "Building a Sustainable City," the Strategic Plan identifies the management and upgrading of transportation infrastructure as part of its focus on robust infrastructure.

Vision Zero

This project also has the ability to align with the principles of Vision Zero, a global movement that has been adopted by the City to eliminate traffic injuries and fatalities caused by vehicular collisions. Vision Zero London is the City's road safety strategy to reduce the number and severity of collisions occurring within the City and increase road safety for cyclists, motorists, and pedestrians.

Climate Change

The Ministry of Environment, Conservation and Parks (MECP) guide "Consideration of Climate Change in Environmental Assessments in Ontario" was finalized in October 2017 and, therefore, the MECP requires that all MCEAs consider this within the scope of the project. Further to this, on April 23, 2019 the City of London declared a climate emergency for the purposes of naming, framing, and deepening its commitment to protecting its economy, ecosystems and its communities from climate change. Two approaches for consideration and addressing climate change in project planning include:

- Reducing a project's effect on climate change (climate change mitigation).
- Increasing the project's and local ecosystem's resilience to climate change (climate change adaptation).

As this is a road improvement study with a small footprint, within an existing corridor and not a new roadway construction project, the climate change impacts can be considered relatively minor, but it does not preclude consideration. Removal of any naturalized vegetation within the corridor can result in a reduction of carbon sequestration capacity which has been taken into consideration for this study. Improvements to active transportation facilities produce positive benefits to air quality and climate change effects by reducing automobile reliance. As such, improving active transportation facilities such as paved cycling lanes and sidewalks has been considered and incorporated into the design alternatives for this study. Climate change mitigation has been considered in the preliminary scoping of stormwater management features.

DISCUSSION

Study Description

The Dingman Drive EA from east of Wellington Road to the Highway 401 overpass, and area intersection, was carried out in accordance with Schedule 'C' of the Municipal Class Environmental Assessment (Class EA) document. The Class EA process is approved under the Ontario Environmental Assessment Act and outlines the process whereby municipalities can comply with the requirements of the Act.

The Class EA study has satisfied the requirements of the Ontario Environmental Assessment Act by providing a comprehensive, environmentally sound planning process with public participation. The Environmental Study Report (ESR) documents the process followed to determine the recommended undertaking and the environmentally significant aspects of the planning, design, and construction of the proposed improvements. It describes the problem being addressed, the existing social, natural and cultural environmental considerations, planning and design alternatives that were considered, and a description of the recommended alternative.

The study area is located in the southern area of the City of London. It extends approximately 1.2 km along Dingman Drive from 150 m east of the Wellington Road South to just east of the Highway 401 overpass. The study area also includes the intersection of Dingman Drive and White Oak Road. During the early stages of the EA study, the Wellington Road and Exeter Road intersection improvements were also included in the scope of the project. After Public Information Centre #1, it was determined that the proposed improvements at Wellington/Exeter fall under the Municipal Class EA Schedule A+ process. Schedule A+ projects are preapproved and can be implemented at any time, so this work was no longer considered part of this study.

The ESR also identifies environmental effects and proposed mitigation measures, commitments to further work, and consultation associated with the implementation of the project.

Planning and Analysis of Alternatives

Phase I of the Municipal Class EA (MCEA) process involved the identification of the problem and opportunity statement. Based on the review of existing conditions, servicing studies, planning documents, development proposals, preliminary traffic studies and collision data, the following summarizes the problems and opportunities within the study area:

- **Growth Management:** Need to accommodate growth of traffic on Dingman Drive as a result of the impending London Gateway development and redevelopment at the southwest corner of Wellington Road and Dingman Drive.
- **Intersection issues:** Decreasing level of service at intersections within the study area requires modifications, including turning lanes, improved traffic control or a roundabout.
- **Active Transportation:** Need to improve active transportation facilities within the study area and provide system connections, as per the City's Cycling Master Plan and the London Plan.

Phase II of the MCEA process includes an inventory of the existing socio-economic, cultural and natural environments to identify alternative solutions (planning alternatives) to address the problem/opportunity statement. Alternative solutions are identified and evaluated based on their ability to reduce impacts to the socio-economic, archaeology

and cultural heritage, natural environments, transportation engineering and cost. Alternative solutions considered for the study area included:

- Do Nothing - Assumes no improvements will be made beyond those already planned and approved.
- Limit Growth - Assumes no improvements will be made beyond those already planned and approved and includes measures to limit development in the study area.
- Road Network Improvements – Includes potential improvements to a nearby east/west roadway such as Exeter Road.
- Operational Improvements – includes the implementation of additional turn lanes, traffic signal coordination, etc.
- Road Widening – includes widening of Dingman Drive to provide additional traffic lanes to increase capacity.
- Transportation Demand Management (TDM) – includes measures to reduce vehicle volumes by using bike lines and promoting transit.

Widening Dingman Drive to provide additional through lanes, cycling facilities, pedestrian pathways and intersection improvements was identified as the preferred solution to accommodate future travel demands. This solution was determined to be the most consistent with municipal planning initiatives, based on its ability to support future development and re-development, improvements to pedestrian and cycling facilities, and the intended function of Dingman Drive.

Design Alternatives

Phase III of the MCEA process involves the development and evaluation of alternative design concepts. The main outcome in this phase of the study was developing road cross-sections and layout concepts for the recommended planning solution.

Identification of the land requirements for this project was a key outcome to identify appropriate mitigation measures such as minimizing socio-economic, cultural, and natural heritage environmental impacts, while still meeting the City's design standards.

The evaluation and identification of the preferred design is divided into three components:

A: Road Widening Alternative Concepts

- Evaluate widening of Dingman Drive Cross Section concepts (all options introduce new pedestrian and cycling facilities):
 - Option 1 - two lane road with a dual left turn lane;
 - Option 2 - four lane road with no centre median; and
 - Option 3 - four lane road with a raised centre median.

B: Road Alignment Alternatives

- Evaluate widening of Dingman Drive:
 - Alternative 1 – to the north, holding the existing southern limits;
 - Alternative 2 – to the south, holding the exiting northern limits; and
 - Alternative 3 – from the existing centreline, equally on both the north and south sides.

C: White Oak Road / Dingman Drive Intersection Alternative Concepts (all options introduce new pedestrian and cycling facilities):

- Evaluate alternatives for the White Oak Road and Dingman Drive intersection:

- Alternative 1 - signalized intersection within (or mostly within) the existing ROW;
- Alternative 2 - fully realign with a signalized intersection; and
- Alternative 3 - roundabout intersection.

The preferred design for all study components considered transportation facilities for all road users (pedestrians, cyclists, transit riders, and drivers) as per the City's Complete Streets requirements and potential impacts to natural, socio-economic, and cultural features and costs. The preferred design was selected, developed and refined through consultation with agencies, stakeholders and the public. The preferred design concepts are summarized in the following table.

Table 1: Summary of Preferred Design Concepts

Summary	Preferred	Rationale
Road Widening Cross Sections	Four lanes with a raised centre median, intersection improvements, sidewalks and bike paths	<ul style="list-style-type: none"> • Satisfies the Problem / Opportunity statement. • Provides best opportunity for Low Impact Development (LID) feature implementation. • Provides the best opportunity for Urban Design features. • Meets design standards and Complete Streets Design Manual vision.
Road Alignment	Widen from the centreline	<ul style="list-style-type: none"> • More equitable property acquisition from multiple property owners. • Gateway commercial development has already taken a centerline widening into consideration. • Encroachment into natural features can be mitigated.
Intersection-White Oak Road and Dingman Drive	Roundabout	<ul style="list-style-type: none"> • Provides the best level of service for future needs. • Meets design standards and complete streets vision. • A signalized intersection will be at an angle, causing safety and line of site concerns. • Reduces vehicle speeds. • Lower potential for severe collisions. • Includes new pedestrian and cyclist infrastructure

The proposed right-of-way width along Dingman Drive will be standardized to 36 m wide. As a result, the cross sections for the road will also generally be standardized. Some details of the cross section may vary subject to the location along the corridor, due to the presence of significant utilities or other features that may warrant a modified alignment of the sidewalks and/or cycling lanes. Significant changes to any lane widths are not anticipated. The cross-section elements are provided to address the MCEA requirements, which are to improve future traffic movement and enhance active methods of transportation, including pedestrian and cycling movements. The preferred design cross sections for Dingman Drive can be seen in the below figures.

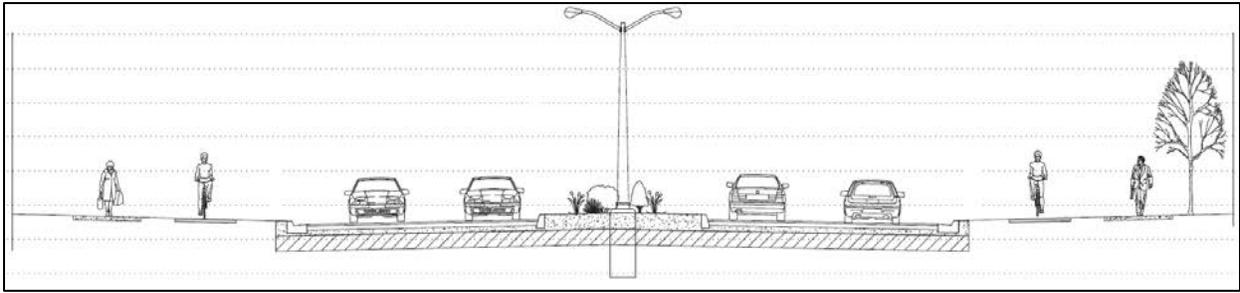


Figure 2A: Dingman Drive – Preferred Design (Option 3) – Four Lane Road with Raised Centre Median

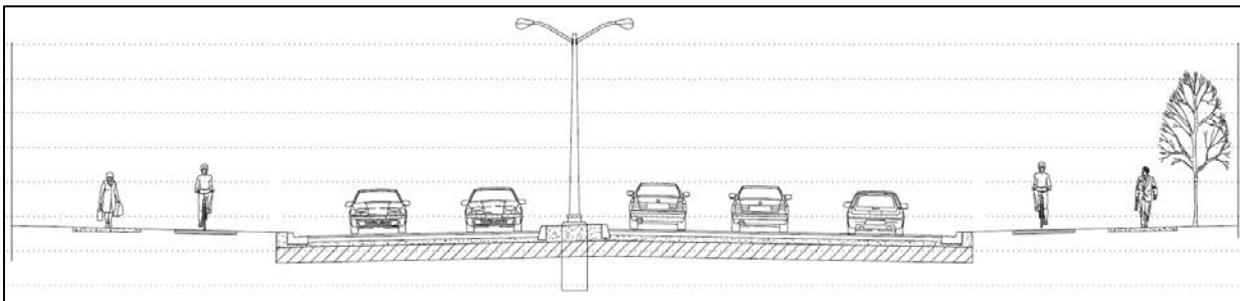


Figure 2B: Dingman Drive – Preferred Design (Option 3) – Four Lane Road with Left turn Lane at Intersection

The Dingman Drive and White Oak Road intersection will be reconstructed, implementing a one-lane roundabout. The design also protects for a future two-lane roundabout. Accommodation for cyclists and pedestrians will be incorporated with bike paths and sidewalks. The exact layout of the intersection will need to be further refined during detailed design to address any final grading transitions to adjacent properties. The preferred intersection concept can be seen in the below figure.

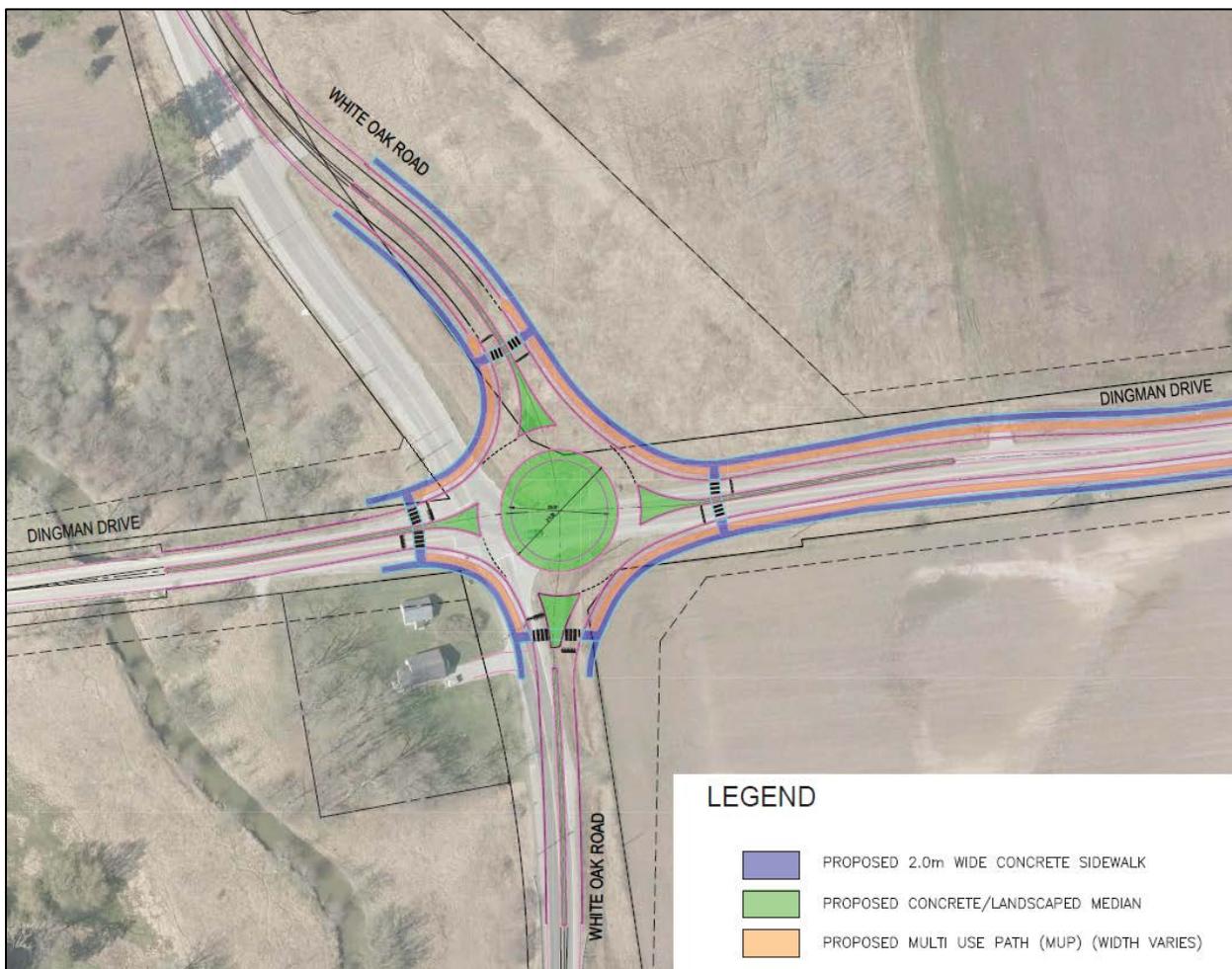


Figure 3: White Oak Road and Dingman Drive Roundabout

Property Impacts

The preferred design requires property from both the north and south sides of Dingman Drive and also from all four quadrants of the Dingman Drive and White Oak Road intersection. The design and property requirements at the Dingman Drive and White Oak Road intersection will also protect for a future two-lane roundabout. The property requirements are detailed in the ESR. The City will continue consultation with impacted property owners to discuss fair acquisition, mitigation, and/or dedication of property as a result of the proposed plan.

Public and Agency Consultation

Consultation was a key component of this Class EA study in order to provide an opportunity for stakeholder groups and the public to gain an understanding of the study process and provide feedback. The consultation plan was organized around key study milestones, including the two Public Information Centres (PIC's), stakeholder engagement and participation of technical review/regulatory agencies. The key stakeholders included residents, interested public, agencies, Indigenous Communities, and those who may be affected by the project.

A Notice of Study Commencement was issued in April 2019. The study team received correspondence from the public and agencies indicating their interest in the study and requesting to be kept informed.

Public Information Centre No. 1 was presented in an online format with material available on June 17, 2019. The PIC introduced the project outlining the rationale behind it, identified existing conditions, alternative planning solutions, evaluation criteria and design considerations. It served as an opportunity for the public to review the project information, ask questions, and provide input to the members of the study team.

Public Information Centre No. 2 was held on November 7, 2019 as an opportunity for attendees to review the impact of the proposed road improvement options on the social, cultural, economic, and natural environments as well as review the preliminary preferred design.

Agencies and stakeholders which required information updates pertaining to them were notified at study milestones and during specific phases of the study. In general, all agencies and stakeholders understand the need for roadway improvements. Some had concerns regarding natural heritage impacts and protection for environment throughout the detailed design. Mitigation of potential impacts involves the avoidance or minimization of potential impacts through good design, construction practices, and/or restoration and enhancement activities. If mitigation is not possible then compensation is possible to achieve a no net-impact for particular natural heritage features. Detailed mitigation measures will be finalized in consultation with impacted property owners, City, UTRCA, and MNRF as part of detailed design.

Public and Agency Consultation – COVID-19 Update

Due to the City of London's move to minimal operations and delivering essential services only, City of London Advisory Committees have been suspended and therefore it was not possible to present the results of this environmental assessment to the appropriate advisory committees. When the advisory committees reconvene, an update regarding the project will be provided.

During the upcoming 30-day public review, the Environmental Study Report would typically be made available both on the City of London website and also at the public library. If libraries continue to be closed due to public health recommendations, the ESR will be made available on the City of London website and alternative formats will be made available upon request.

IMPLEMENTATION

Implementation Schedule

This Environmental Study Report provides the framework for the ultimate conceptual design of the corridor and needs to be addressed to support development. The scope of area developments prompted and informed the study. While it is beneficial to complete the environmental assessment in advance of development, the schedule for detailed design and construction of municipal road improvements can be coordinated with development schedules. Implementation timing and potential phasing will be considered in coordination with the most current information available, specifically from the proponents of the London Gateway development.

Construction Staging

The funding for the reconstruction of Dingman Drive from east of Wellington Road to the Highway 401 overpass is provided for action as early as 2021 as a best case scenario in the Development Charges Background Study. However, implementation is subject to approvals, design and property acquisition timeframes which would likely make complete implementation in 2021 challenging. Project implementation considerations, combined with the timing of development needs, will refine the construction schedule.

The improvements on Dingman Drive from east of Wellington Road to the Highway 401 overpass could be undertaken in one construction season if an early start is possible (i.e. early April to early December), with the placement of the surface asphalt and completion of any remaining minor works in the subsequent construction season. Near-term implementation would require coordination with other major projects in this corridor, including the Gateway development and the MTO's Highway 401 Dingman Drive overpass replacement project.

As per the 2019 Development Charges Background Study, the White Oak Road and Dingman Drive roundabout is recommended to begin in 2027 and could be undertaken in one construction season. The timing of this need will be reviewed in the future based on annual monitoring of traffic volumes and safety operations at the intersection.

Coordination with property owners, London Hydro, and regulatory agencies is planned for early in the design process, providing ample time for consultation. Network traffic management and a communications plan will be developed during detailed design to inform road users, outline detours during closures, and instruct local traffic movement. Access to commercial and industrial properties will be maintained during construction.

FINANCIAL CONSIDERATIONS

Preliminary Cost Estimates

A preliminary construction cost estimate for the ultimate improvements identified in the study has been prepared, including engineering, property acquisition, utility relocations, roadway construction, street lighting and signals construction, landscaping, and staging. Total project costing may also be impacted as a result of the phasing limits and timing. The total preliminary construction estimate developed during the environmental assessment for both Phase 1 (Dingman Drive) and Phase 2 (Dingman Drive and White Oak Road intersection) of this project is \$14,524,000, including contingency. There are expected to be opportunities to recover portions of the cost related to the Gateway development. The breakdown of the cost estimate developed during the environmental

assessment is shown below. This is within the value identified in current 2019 Development Charges Background Study.

Table 2: Environmental Assessment Cost Estimate for Dingman Drive Improvements

Item	Dingman Drive near Wellington	White Oak Road Intersection	Total
Removals	\$171,000	\$76,000	\$247,000
Sanitary Sewers	\$0	\$3,000	\$3,000
Storm Sewers	\$1,053,000	\$602,000	\$1,655,000
Watermains	\$100,000	\$54,000	\$154,000
Roadworks	\$3,508,000	\$1,379,000	\$4,887,000
Streetscaping	\$230,000	\$100,000	\$330,000
Street Lighting and Traffic Signals	\$700,000	\$150,000	\$850,000
Utility Work*	\$1,000,000	\$240,000	\$1,240,000
Miscellaneous	\$589,000	\$476,000	\$1,065,000
SUBTOTAL	\$7,351,000	\$3,080,000	\$10,431,000
Engineering (10%)	\$735,000	\$308,000	\$1,043,000
Contingency (15%)	\$1,200,000	\$500,000	\$1,700,000
Estimated Property Costs			\$1,350,000
TOTAL	\$9,286,000	\$3,888,000	\$14,524,000

*Utility relocation cost sharing with the utility owners to be confirmed during detailed design.

CONCLUSION

Improvements to Dingman Drive from east of Wellington Road to the Highway 401 overpass and improvements to the Dingman Drive and White Oak Drive intersection are necessary as planned development in the vicinity will create growth along this corridor. A Municipal Class Environmental Assessment (EA) was undertaken to confirm the preferred long-term solution for the Dingman Drive corridor. The ESR has been completed and is ready for final public review. The Class EA Study was carried out in accordance with Schedule C of the Municipal Class Environmental Assessment process.

Road design alternatives were developed to address the problems and opportunities. The preferred planning solution for Dingman Drive near Wellington Road is to create a complete street with new accommodation for pedestrians and cyclists, increased capacity for drivers, safe access points to future developments and planning for future transit service. A future roundabout is proposed at the Dingman Drive intersection with White Oak Road.

Consultation was a key component of this study. The Class EA was prepared with input from agencies, utilities, emergency service providers, property owners in proximity to the study, and Indigenous Communities.

Pending Council approval, a Notice of Study Completion will be filed, and the ESR will be placed on public record for a 30-day review period. Stakeholders and the public are encouraged to provide input and comments regarding the study during this time period. Accommodation will be made for those requiring hard copy review. Should the public and stakeholders feel that the EA process has not been adequately addressed, they may request a Part II Order to the Minister of the Environment, Conservation and Parks (MECP) within the 30-day review period per MECP instructions on their website.

This Environmental Study Report provides the framework for the ultimate conceptual design of the corridor to support development. The schedule for detailed design and construction will be coordinated with current information on development schedules and phasing to align with development needs and manage costs.

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Attach: Appendix A – Environmental Study Report Executive Summary
 c: AECOM
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City of London

DRAFT: Dingman Drive Improvements

East of Wellington Road to Highway 401 and Area
Intersection Municipal Class Environmental Assessment
Environmental Study Report

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Executive Summary

The City of London (the City) completed a Municipal Class Environmental Assessment (MCEA) study to address necessary transportation infrastructure requirements along Dingman Drive 150m east of Wellington Road to east of the Highway 401 overpass and area intersections including the Wellington Road and White Oak Road intersections. The Dingman Drive Improvements MCEA (hereafter the “Project”) is classified as a Schedule ‘C’ project in the Municipal Engineers Association (MEA) MCEA process (October 2000, as amended in 2007, 2011 and 2015), where project activities are subject to the full environmental assessment (EA) planning process of the MCEA. The study included:

- problem and opportunity statement;
- the identification and evaluation of planning alternatives solutions;
- the evaluation of alternative design concepts for the selected preferred solution;
- an assessment of the effects on the environment including natural, social, economic and engineering aspects associated with the preferred design;
- the identification of measures required to mitigate any potential adverse effects; and
- public, technical agencies impacted property owners, stakeholders, and Indigenous Community consultation.

These study findings, the results and recommendations, along with public, review agency and stakeholder consultation have been documented in this Environmental Study Report (ESR).

Introduction and Background

The City of London continues to develop and grow as a municipality. To accommodate this growth, new infrastructure is required that recognizes the capacity needs of planned growth and the objectives of protecting established communities and businesses. Dingman Drive is an east-west arterial roadway and currently consists of a two-lane rural cross section with no sidewalks or cycling facilities.

This corridor improvement project was identified as a priority in the 2019 Transportation Development Charges Background Study (DCBS) due to the pending Gateway commercial development (formerly PenEquity) and redevelopment near Wellington Road and Highway 401. The project provided an opportunity to enhance and improve the features of the roadway and to accommodate existing and future traffic demands (including transit and active transportation) from expected development. The improvements will provide better connectivity to adjacent communities for the overall road network by following the City’s Complete Streets Design Manual approach.

The study area is located in the southern area of the City of London. It extends approximately 1.2km along Dingman Drive from 150m east of the Wellington Road South intersection to just east of Highway 401. The Study Area also includes the intersection of Dingman Drive and White Oak Road (**Refer to Figure EX-1**).

Figure EX-1: Study Area



Problem / Opportunity Statement

Considering the recommendations of the 2019 Development Charges Update and the results of traffic analysis, the following problem and opportunity statement was composed:

Problem: As the City of London continues to grow and develop, new transportation infrastructure is required that recognizes the capacity needs of planned growth and the objectives of protecting established communities and businesses. Due to the planned Gateway commercial development, growth is anticipated along the Dingman Drive corridor that will include a retail shopping centre and corresponding increased traffic, cycling and pedestrian volumes. The existing two-lane roadway will not have sufficient capacity to accommodate the projected growth and number of road users. Improvements are also recommended at the White Oak Road / Dingman Drive intersection to provide safer lines of sight.

Opportunity: The Municipal Class EA planning process will provide an opportunity to confirm the need to improve Dingman Drive including the associated intersection and evaluate all reasonable alternatives to accommodate existing and future traffic demands. It will provide better connectivity to adjacent communities for the overall road network by following the City of London Complete Streets Design Manual (CSDM) approach with consideration of public safety and preliminary design standards. The cycling network will also improve connectivity with new cycling facilities and corridors including cycle lanes along Dingman Drive and a potential connection to the existing multi-use pathway at White Oak Road west of the Highway 401 overpass and connectivity to the multi-use pathway at the Murray Marr Stormwater Management Facility.

This project also has the ability to align with the principles of **Vision Zero**, a global movement that has been adopted by the City to eliminate traffic injuries and fatalities caused by vehicular collisions. Vision Zero London is the City's road safety strategy to reduce the number and severity of collisions occurring within the City and increase road safety for cyclists, motorist and pedestrians. (Source: City of London).

Alternative Planning Solutions

For the purposes of the Dingman Drive and White Oak Road / Dingman Drive Intersection Improvements MCEA, planning solutions for the undertaking included:

- **Do Nothing** – Assumes no improvements will be made beyond those already planned and approved.
- **Limit Growth** - Assumes no improvements will be made beyond those already planned and approved and includes measures to limit development in the study area.
- **Road Network Improvements** – Includes potential improvements to a nearby east/west roadway (Exeter Road).
- **Operational Improvements** – includes the implementation of additional turn lanes, traffic signal coordination, etc.
- **Road Widening** – includes widening of Dingman Drive from 2 to 4 lanes to provide additional traffic lanes to increase capacity.
- **Transportation Demand Management (TDM)** – Includes measures to reduce vehicle volumes along the study corridor by promoting alternative modes of transportation such as transit, cycling or walking.

The above identified alternative planning solutions were screened against the problem and opportunity statement as identified in Section 6 of the ESR. The evaluation of alternative planning solutions involved of a two-step

process. Firstly, Do Nothing, Limit Growth and Road Network Improvements were screened out because it was determined that these solutions will not address the project needs as identified in the problem and opportunity statement. Next, the remaining alternative solutions, (Operational Improvements, Road Widening and TDM), were carried forward for further assessment and were evaluated against the criteria developed for the project in order to determine the preferred recommended solution.

Summary of Alternative Planning Solutions Evaluation

Following the evaluation of alternatives and discussions with the City, agencies, public and stakeholders, the following were carried forward for further consideration:

Operational Improvements: Less Preferred - Intersection improvements such as the addition of auxiliary lanes to accommodate turning movements to and from the future Gateway commercial development may reduce traffic delay times and improve the flow along Dingman Drive. The addition of turning lanes will not fully solve capacity and operational deficiencies on their own, however, these improvements will be considered in conjunction with the final recommended concept to enhance the future operation and capacity of Dingman Drive.

Road Widening: Most Preferred– This option is carried forward for further assessment as it addresses the problem and opportunity statement and the socio-economic and transportation engineering criteria. This option has the potential to impact archaeological resources and the natural environment, however, this solution may also provide some opportunity for enhancement and protection of the natural environment.

TDM: Less Preferred– The provision of TDM measures will not fully address anticipated future travel demands within the study area. However, improvements to transit and active transportation facilities in the study area, if implemented with additional infrastructure improvements, can partially address the objectives of this study. These improvements will be considered in conjunction with the final recommended design concept to enhance the operation and capacity of Dingman Drive.

Alternative Design Solutions

Section 6 of this ESR confirmed that the preferred planning solution is to widen the existing roadway and ROW in conjunction with some operational improvements and transportation demand management. This section of the study identifies and evaluates road cross sections and alignments for the preferred solution of proposed road widening and evaluates intersection types for White Oak Road / Dingman Drive.

Evaluation Criteria

In order to evaluate the alternatives, a set of criteria were chosen which are categorized as follows in Table EX-1:

Table EX-1: Evaluation Criteria – Design Concept Options

Category	Criteria	Indicator
Socio-Economic	<ul style="list-style-type: none"> Property requirements Construction impacts Aesthetics 	<ul style="list-style-type: none"> Permanent/temporary impacts on private/public lands Travel delays/detours Urban design Amount of property acquisition Potential impact to planned development Potential impacts to land use Ability to maximize active transportation facilities (sidewalks, bike paths)
Cultural Environment	<ul style="list-style-type: none"> Archaeological resources Cultural heritage resources 	<ul style="list-style-type: none"> Potential Impacts on archaeological resources Potential Impacts on cultural heritage resources and cultural landscapes
Natural Heritage	<ul style="list-style-type: none"> Aquatic environment 	<ul style="list-style-type: none"> Impacts/enhancements to aquatic species and habitat

Category	Criteria	Indicator
	<ul style="list-style-type: none"> • Terrestrial environment • Species at Risk • Climate change • Source water protection 	<ul style="list-style-type: none"> • Impacts/enhancements to terrestrial species and habitat • Potential Impacts to Species at Risk and habitat • Potential Effects to surface water including Regulatory Flood Limit • Effects of the project on the climate/effects of climate on the project • Effects of drainage on source water resources
Technical	<ul style="list-style-type: none"> • Design • Constructability • Safety • Servicing/utilities • Transportation/traffic 	<ul style="list-style-type: none"> • Accommodate all users • City design standards • Improve level of service • Vehicular and active transportation considerations • Potential Impacts on existing infrastructure (e.g. London Hydro Substation, Hydro Poles, Water, and Sewer Pipes) • Public Health and Safety • Design/Construction Complexities
Cost	<ul style="list-style-type: none"> • Capital costs • Maintenance costs • Property costs 	<ul style="list-style-type: none"> • Initial costs and maintenance costs • Total life-cycle costs

Alternative Design Solutions

The following design solutions were identified and evaluated.

A: Road Widening Alternative Concepts

- Evaluate widening of Dingman Drive Cross Section concepts:
 - two lane road with a dual left turn (26-36m ROW);
 - four lane road with no centre median (36m ROW); and
 - four lane road with a raised centre median (36m ROW).

B: Road Alignment Alternatives

- Evaluate widening of Dingman Drive to:
 - the north;
 - widening to the south; and
 - widening from the existing centreline.

C: White Oak Road / Dingman Drive Intersection Alternative Concepts:

- Evaluate alternatives for the White Oak Road and Dingman Drive intersection:
 - signalized intersection within or mostly within the existing ROW;
 - fully realign with a signalized intersection; and
 - roundabout intersection.

Summary Evaluation

A detailed qualitative assessment of each design option (road widening, alignment and intersection) was completed based on the previously described evaluation components and criteria. In this evaluation approach, trade-offs consider the advantages and disadvantages of each option to address the problem and opportunity statement with the least environmental effects and the most technical benefits which forms the rationale for the identification of the preferred alternative. A comprehensive evaluation was prepared for each design option (road widening, cross sections, alignments, and intersections) and was completed as outlined in the ESR.

The recommended design concept is summarized in **Table EX-2**. Conceptual project details are presented in **Section 8.0 of the ESR**.

Table EX-2: Summary of Recommended Design

Summary	Preferred	Rationale
Road Widening Cross Section	Four Lanes with a raised centre median	<ul style="list-style-type: none"> Satisfies the Problem / Opportunity statement. Provides best opportunity for LID implementation. Meets design standards and Complete Streets vision.
Road Alignment	Widen from the centerline	<ul style="list-style-type: none"> More equitable property acquisition from multiple property owners. Gateway commercial development has already taken a centerline widening into consideration. Encroachment into natural features can be mitigated.
Intersection – White Oak Road / Dingman Drive	Roundabout	<ul style="list-style-type: none"> Provides the best level of service for future needs. Meets design standards and complete streets vision. Provides an opportunity to remove invasive plant species (Phragmites). A signalized intersection will be at an angle, causing safety and line of site concerns.

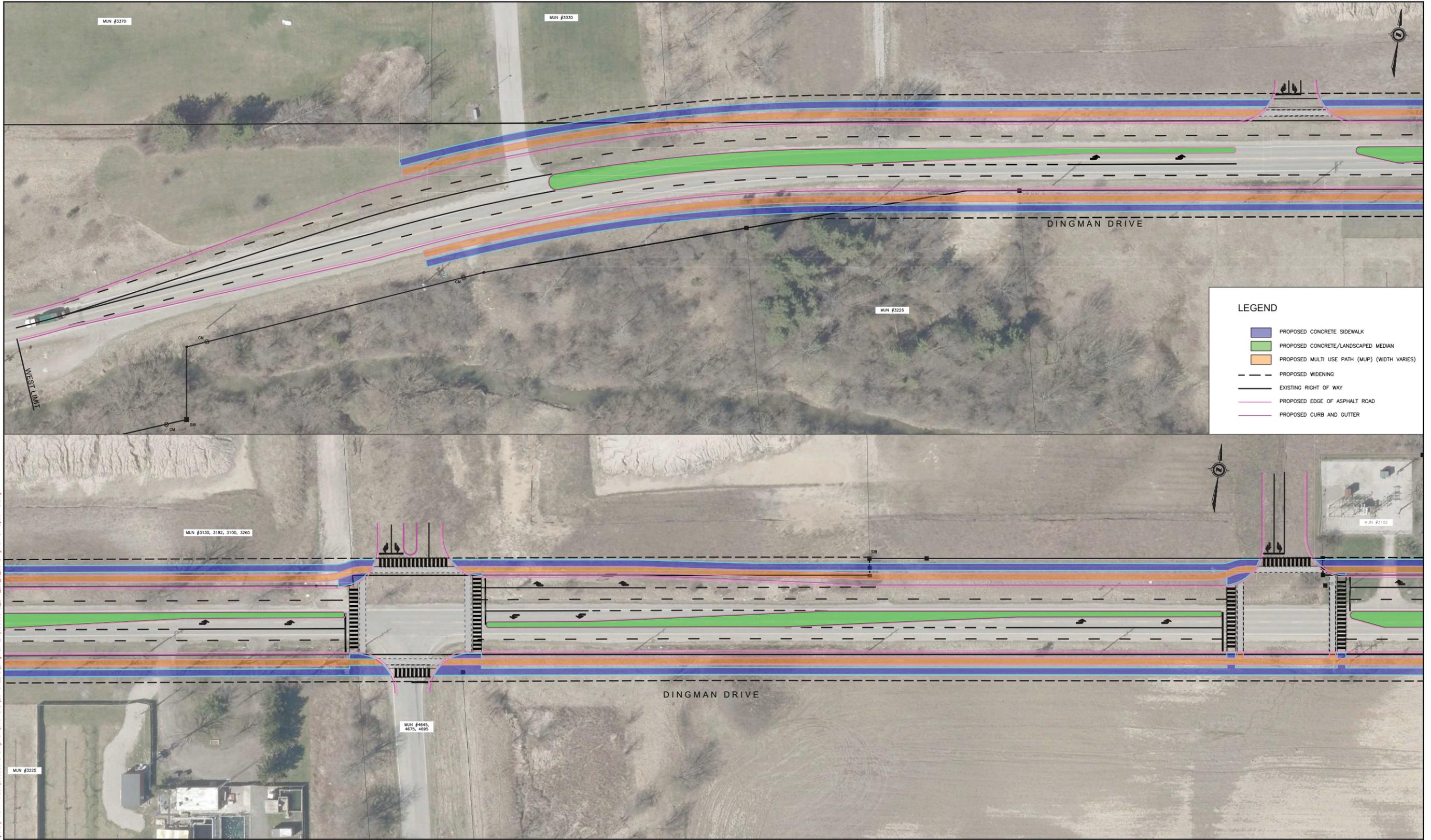
Project Description

The Preferred Design for Dingman Drive and the White Oak Road / Dingman Drive intersection (as illustrated in **Figures EX-2 – EX-4**) considered transportation facilities for all road users (motorists, transit, cyclists, and pedestrians as per the City’s Complete Streets requirements) and potential impacts to natural, socio-economic and cultural heritage resources and costs. The preferred design was selected, developed and refined through consultation with agencies, stakeholders and the public as discussed in Section 3 of the ESR.

The following table summarizes the proposed preliminary design criteria used in development of the road widening and reconstruction design for Dingman Drive. A number of criteria may warrant a review during detailed design to determine which of the City of London Design Requirements or Complete Streets Design Manual criteria are most appropriate.

Table EX-3: Preliminary Design Criteria

Design Criteria	Proposed Design Value	Comment/Mitigation Measure
Posted Speed	60 km/h	<ul style="list-style-type: none"> Actual posted speed limits to be reviewed by Transportation Division.
Design Speed	70 km/h	<ul style="list-style-type: none"> No identified restrictions.
Centreline Radius (min)	N/A	<ul style="list-style-type: none"> No identified restrictions.
Curb and Gutter Radii	Varies	<ul style="list-style-type: none"> Radius to conform with recommended values (12-15m), subject to avoiding property or building impacts.
Right Turn Lane	3.5 m	<ul style="list-style-type: none"> To be reviewed further at detailed design stage to determine governing criteria (Transportation Design Requirements and/or Complete Streets Design Manual)
Left Turn Lane	3.0 m	<ul style="list-style-type: none"> To be reviewed further at detailed design stage to determine governing criteria (Transportation Design Requirements and/or Complete Streets Design Manual)
Through Lane	3.3 m	<ul style="list-style-type: none"> To be reviewed further at detailed design stage to determine governing criteria (Transportation Design Requirements and/or Complete Streets Design Manual)



LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED CONCRETE/LANDSCAPED MEDIAN
- PROPOSED MULTI USE PATH (MUP) (WIDTH VARIES)
- PROPOSED WIDENING
- EXISTING RIGHT OF WAY
- PROPOSED EDGE OF ASPHALT ROAD
- PROPOSED CURB AND GUTTER

EXISTING SERVICES	DRAWING #, SOURCE	DATE	AS CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN				
					DRAWN BY				
					CHECKED				
					APPROVED				
					DATE	JANUARY 2020			

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 London CANADA

SCALE
 N.T.S.

DINGMAN DRIVE
 ENVIRONMENTAL ASSESSMENT

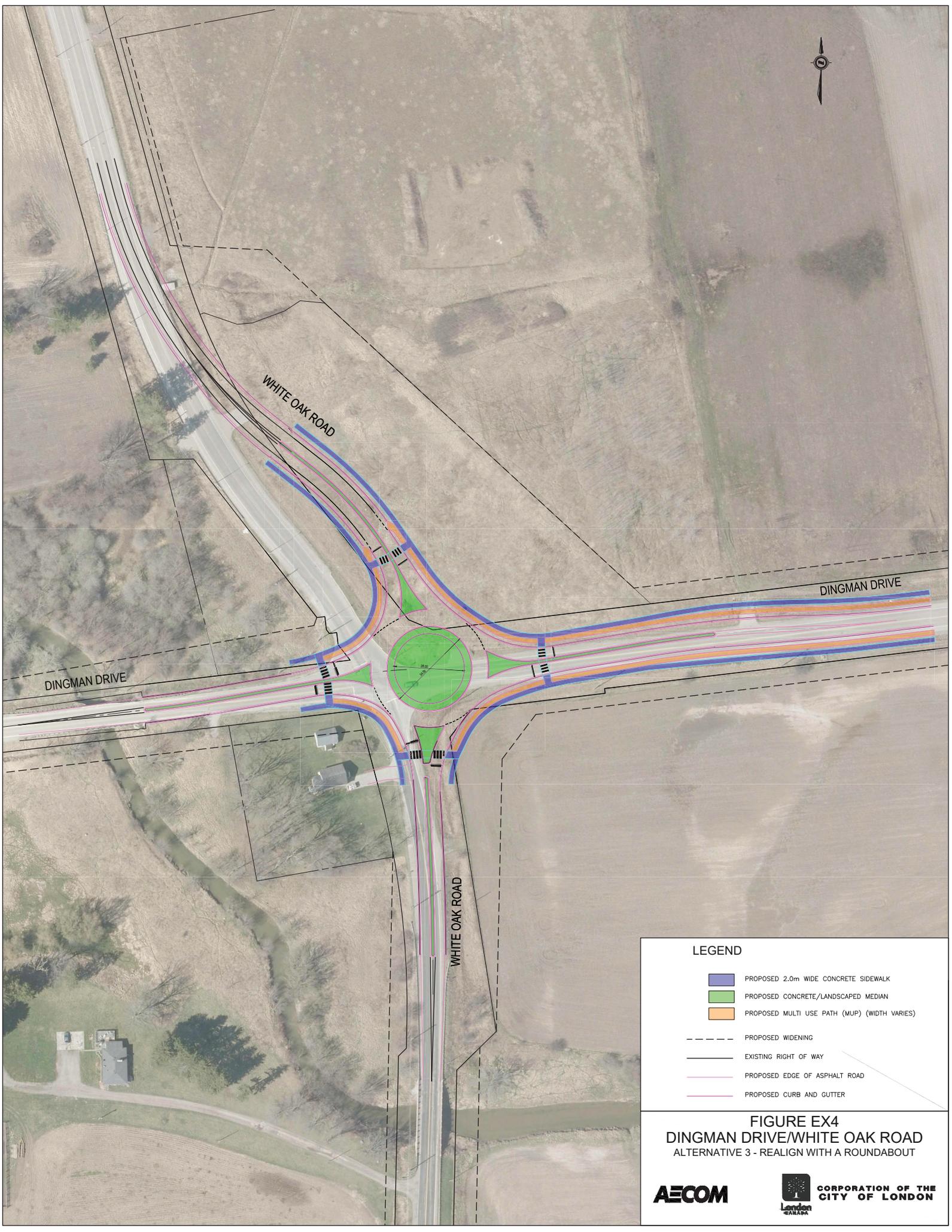
**FIGURE EX2
 PREFERRED DESIGN ALTERNATIVE**

PROJECT No.
60600913

SHEET No.

PLAN FILE No.

C:\Users\beta\OneDrive\Desktop\Temporary Work Folder\60600913_Dingman\910-CAD\20-SHEETS\60600913_Dingman\910-CAD\20-SHEETS\60600913_SHT_20_C_03_Dingman Dr Option 3.dwg



LEGEND

-  PROPOSED 2.0m WIDE CONCRETE SIDEWALK
-  PROPOSED CONCRETE/LANDSCAPED MEDIAN
-  PROPOSED MULTI USE PATH (MUP) (WIDTH VARIES)

-  PROPOSED WIDENING
-  EXISTING RIGHT OF WAY
-  PROPOSED EDGE OF ASPHALT ROAD
-  PROPOSED CURB AND GUTTER

FIGURE EX4
DINGMAN DRIVE/WHITE OAK ROAD
ALTERNATIVE 3 - REALIGN WITH A ROUNDABOUT



CORPORATION OF THE CITY OF LONDON

Curb Lane	3.3 m	<ul style="list-style-type: none"> To be reviewed further at detailed design stage to determine governing criteria (Transportation Design Requirements and/or Complete Streets Design Manual)
Right-of-Way Width	36.0 m	<ul style="list-style-type: none"> Full 36m Civic Boulevard ROW width achievable along full corridor length.
Pavement Width	Varies	<ul style="list-style-type: none"> Varies along length, to accommodate cross section components.
Vertical Curve, minimum K Value	25 (crest) 25 (sag)	<ul style="list-style-type: none"> Minor adjustments to vertical profile.
Road Grades	6% (max.) 0.5% (min.)	<ul style="list-style-type: none"> Minor adjustments to vertical profile.
Sidewalks	2.0 m	<ul style="list-style-type: none"> In boulevard separated from MUP by 1.0 m.
Multi-Use Path (MUP) Width	1.8 m	<ul style="list-style-type: none"> In boulevard MUP.
Boulevard Width	Varies	<ul style="list-style-type: none"> Total width varies subject to sidewalk and bike path location, conflicting utilities, road cross section, etc.

Cross Section Elements

The proposed right-of-way width along Dingman Drive will be standardized to 36m wide. As a result, the cross section for the roadway will also generally be standardized. Some portions of the cross section may vary subject to the location along the corridor, due to the presence of significant utilities or other features that may warrant a modified alignment of the sidewalks and/or MUPs. Significant changes to any lane widths are not anticipated. **Figures EX-2 and EX-3** illustrates the proposed road widening design alternative. The cross-section elements are provided to address the MCEA requirements, which are to improve future traffic movement, enhance alternative methods of transportation, including pedestrian and cycling movements.

White Oak Road / Dingman Drive Intersection

The White Oak Road / Dingman Drive intersection will be reconstructed, implementing a 1-lane roundabout. The exact layout of the intersection will need to be further refined during detailed design to address any final grading transitions to adjacent properties. **Figure EX-4** illustrates the proposed layout for the White Oak Road / Dingman Drive intersection.

Preliminary Construction Cost Estimate

A preliminary construction cost estimate for this project has been prepared, including road reconstruction utility relocations and engineering. Property acquisition will be required in order to accommodate the full proposed road widenings and reconstruction of Dingman Drive and the White Oak Road Intersection. The cost of any property acquisition will be subject to project timing, land dedication through development process and market costs. For the purposes of the construction estimate, property acquisition costs have not been estimated based on current market value and land area required. Total project costing may also be impacted as a result of the phasing limits and timing. The total preliminary construction estimate for this project for the proposed improvements is **\$13.2M**, including contingency and engineering. Total preliminary estimated property costs are **\$1.35M**.

Table EX-4: Preliminary Construction Cost Estimate

Item	Dingman Drive	White Oak Road Intersection	Project Total
Removals	\$171,000.00	\$76,000.0	\$247,000
Sanitary Sewers	\$0.00	\$3,000.00	\$3,000

Item	Dingman Drive	White Oak Road Intersection	Project Total
Storm Sewers	\$1,053,000.00	\$602,000.00	\$1,655,000
Watermains	\$100,000	\$54,000.00	\$154,000
Roadworks	\$3,508,000.00	\$1,379,000.00	\$4,887,000
Streetscaping and Tee Removals	\$230,000.00	\$100,000.00	\$330,000
Street Lighting and Traffic Signals	\$700,000.00	\$150,000.00	\$850,000
London Hydro Work	\$500,000.00	\$150,000.00	\$650,000
Start Work	\$150,000.00	\$20,000.00	\$170,000
Bell Work	\$150,000.00	\$50,000.00	\$200,000
Rogers Work	\$150,000.00	\$20,000.00	\$170,000
Gas Main Relocation	\$50,000	0	\$50,000
Miscellaneous	\$589,000.00	\$476,000.00	\$1,065,000
SUBTOTAL	\$ 7,351,000	\$3,080,000.00	\$10,431,000
Engineering (10%)	\$735,000	\$308,000	\$1,043,000
Contingency (15%)	\$ 1,200,000	\$500,000	\$1,700,000
TOTAL	\$ 9,286,000	\$3,888,000.00	\$13,174,000
Estimated Property Costs			\$1,350,000

* Utilities relocation costs to be shared between City of London and utilities owners (full cost shown). Exact cost sharing agreement and values to be confirmed during detailed design and approvals process.

Recommended Mitigation Measures / Monitoring

Implementation of the Project has the potential to create positive and negative effects. The avoidance of negative effects has been a key consideration throughout Phases 1 through 3 of the EA process and has been discussed with agencies, stakeholders, and the public. Effects can be generally divided into two (2) main categories: construction-related effects (which are temporary in nature) and effects related to operation and maintenance of the Project (effects that are permanent). Negative effects caused by the Project are avoided to the extent possible; however, in cases where negative effects cannot be fully avoided, mitigation measures will be required during construction, and/or operation and maintenance of the Project.

Construction:

Based on the preferred design concept, it is recognized that the Dingman Drive and White Oak Road intersection improvements will result in some impact on the existing environment. In order to address the effects, the following approach was taken:

- **Avoidance:** The first priority is to prevent the occurrence of negative effects (i.e., adverse environmental effects) associated with the implementation of an alternative;
- **Mitigation:** Where adverse environmental effects cannot be avoided, it will be necessary to develop the appropriate mitigation measures to eliminate or reduce to some degree, the negative effects associated with implementing the alternative; and
- **Enhancement/Compensation:** In situations where appropriate mitigation measures are not available, or significant net adverse effects will remain following the application of mitigation, enhancement or compensation measures may be required to counterbalance the negative effect through replacement in kind, or the provision of a substitute or reimbursement.

The following mitigation measures are recommended to ensure that any disturbances are managed by the best available methods. These measures will be further confirmed and developed during detailed design. The ESR provides assessments of the potential impacts associated with the Project and the recommended mitigative measures required to reduce these effects.

Natural Environment:

- An Erosion and Sediment Control Plan should be prepared during detailed design;
- A detailed Species at Risk (SAR) and Wildlife Handling Protocol should be developed prior to the initiation of construction;
- A Notice of Activity is to be prepared with the associated Habitat Management Plan at detailed design;
- Wherever possible, habitat for SAR should be compensated for and/or enhanced; and
- A detailed restoration plan utilizing native plantings and native seed mixes following City specifications should be developed and followed.

Social Environment:

- A traffic management plan is to be developed to minimize disruption during construction;
- Access to existing properties, businesses, institutions and commercial areas are to be maintained during and after construction; and
- Infrastructure is to be implemented to support active and healthy lifestyles (walking, cycling).

Archaeology and Cultural Heritage:

- The completion of a Stage 2 Archaeological Assessment is to be undertaken during detailed design (once property acquisition is complete) for any areas within properties where permission to enter was not granted and identified as requiring further archaeological fieldwork;
- No impacts to existing archaeological and cultural heritage resources is to occur; and
- During early detailed design, if avoidance of cultural heritage resource BHR 1 cannot be avoided a property specific Cultural Heritage Evaluation Report should be completed.

Summary

The ESR outlines the process required to ensure that the proposed transportation improvements meet the requirements of the *EAA*. The MCEA planning process has not identified any significant environmental concerns that cannot be addressed by incorporating established mitigation measures during construction.

The proposed improvements resolve the problem/opportunity statement. A preliminary evaluation of potential impacts has been included in the evaluation, which indicates minor and predictable impacts that can be addressed by recommended mitigation measures as presented in the ESR. The proposed mitigation measures will further be developed at detailed design and will form commitments that will be adhered to by the City. Appropriate public notification and opportunity for comment was provided and no comments were received that could not adequately be addressed. Subject to receiving MCEA clearance following the 30-day review period, the City will complete the detailed design and permitting-approvals phase and proceed to construction as outlined in the ESR.