

HALIFAX

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Item No. 9.1.1
Halifax Regional Council
June 9, 2020

TO: Mayor Savage and Members of Halifax Regional Council

SUBMITTED BY: Original Signed by 
Jacques Dubé, Chief Administrative Officer

DATE: January 24, 2020

SUBJECT: Dutch Village Road Complete Streets Functional Plan

ORIGIN

On July 19, 2016, the following motion of Regional Council was put and passed:

“Direct staff to undertake preliminary design work to confirm the cost and feasibility of providing pedestrian and bicycle infrastructure, and potentially other streetscape elements where needed, on Dutch Village Road and report back to Regional Council, and further that if approved by Regional Council, the project be considered for future delivery through the active transportation capital program and include a public engagement process.”

The *Making Connections: 2014-19 Halifax Active Transportation Priorities Plan*, approved by Regional Council on September 9, 2014, lists Dutch Village Road as a Candidate Bicycle Route.

The *Integrated Mobility Plan* - Action 69: Deliver the following Priority Sidewalk Connection by 2020: Dutch Village Road; Action 121: Identify “Strategic Corridors” – existing road corridors that are key to regional traffic flow, transit, goods movement and active transportation – and develop plans that will guide their development over time.

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter, subsection 318(2): “In so far as is consistent with their use by the public, the Council has full control over the streets in the Municipality.”

Halifax Regional Municipality Charter, subsection 322(1): “The Council may design, lay out, open, expand, construct, maintain, improve, alter, repair, light, water, clean, and clear streets in the Municipality.”

RECOMMENDATION ON PAGE 2

RECOMMENDATION

It is recommended that Halifax Regional Council

1. Suspend the rules of procedure under Schedule 7, the Transportation Standing Committee Terms of Reference, of Administrative Order One, the Procedures of the Council Administrative Order.
2. Direct the Chief Administrative Officer to proceed with the detailed design of Dutch Village Road between Alma Crescent / Supreme Court and Joseph Howe Drive / Bayers Road as described in the Discussion section of this report.
3. Direct the Chief Administrative Officer to consider the addition of streetscaping elements such as trees, benches, bicycle racks, waste receptacles and potentially other elements to beautify the corridor during detailed design, and if included, ensure the corridor is maintained as an 'Enhanced Maintenance Area'.

EXECUTIVE SUMMARY

This report seeks Council direction to proceed with the detailed design and construction of improvements to Dutch Village Road, including enhancements for pedestrians and cyclists. The 2017 *Integrated Mobility Plan* (IMP) identifies Dutch Village Road as a Priority Sidewalk Connection based on the lack of sidewalk on a street with high traffic volumes and transit service in an area where residential and commercial density is expected to continue to increase. The IMP sets targets to increase the number of trips made by walking, bicycling or transit and recognizes the inter-relationship of transportation and land use. With the increased residential intensification enabled along Dutch Village Road by recent MPS and LUB amendments, as well as the proximity to the regional greenway network (i.e. Chain of Lakes Trail), there is an opportunity to influence how people travel by filling in the gaps in the active transportation infrastructure. In addition to the IMP, the *Active Transportation Priorities Plan* identifies Dutch Village Road as a candidate bicycle route.

WSP Canada Inc. were retained in 2018 to complete a functional design study, which investigated multiple design options for active transportation upgrades between Alma Crescent / Supreme Court and Joseph Howe Drive (but not including those intersections). The design options were evaluated based on their improvements to the pedestrian & cyclist environment, impacts to traffic, and impacts to curbside activities (e.g. parking). The functional plan recommends an improved pedestrian realm with sidewalk and curb on both sides of the street, a raised protected bicycle lane on both sides of the street, and potentially space for amenities such as benches, waste receptacles, bicycle parking, transit waiting areas and vegetation. It also includes standard width travel lanes, intersection improvements, and shortened pedestrian crossing distance. The plan would improve access management to properties by replacing "nose-in" parking and with defined driveways. The proposed bicycle facilities on Dutch Village Road will connect to the Chain of Lakes Trail and support safer trips for cyclists from Fairview to Clayton Park, Bayers Lake Business Park as well as the Halifax Peninsula. The study considered necessary property acquisition, utility relocation, construction cost and feedback from impacted stakeholders and the public. The preferred functional plan strives to improve the safety and functionality of the street as well as create an environment in which the Dutch Village Road area can thrive and grow.

The original project did not include the intersections of Dutch Village Road at Alma Crescent / Supreme Court and at Joseph Howe Drive. The original scope was limited to the section of the street that currently lacks a sidewalk on the west side. However, based on feedback from the public and internal stakeholders, the functional design scope was expanded to include both intersections. Recommended active transportation and road safety upgrades stemming from this work include extending the bicycle lanes to the intersections and closing the right turn channels at Alma Crescent and Joseph Howe Drive.

With approval of the recommendations in this report, the proposed functional design plan will move to the detailed design stage. Upon completion of the detailed design process, a construction tender can then be considered. The earliest construction date would be 2021/22; however, this would be contingent upon a

number of factors including a timely completion of the detailed design, budget availability, and overall priorities pursuant to the capital budget process.

BACKGROUND

The *Integrated Mobility Plan* (IMP), approved by Regional Council in December 2017, identifies Dutch Village Road as a Priority Sidewalk Connection (Action 69). According to HRM's evaluation criteria, the west side of Dutch Village Road is rated HIGH for a new sidewalk due to road classification, presence of bus stops and passenger volume, along with the nearby land uses such as daycares, shopping, employment, and high density residential. Additionally, the 2014 Making Connections: Active Transportation Priorities Plan, identifies Dutch Village Road as a Candidate Bicycle Route.

The IMP also recommends undertaking 'Strategic Corridor Plans' to guide the development of roads that are key to regional traffic flow, transit, goods movement and active transportation (Action 121) and to take a Complete Streets approach to redesigning a street (Policy 2.3.5a). A 'complete streets' approach considers how the street functions as a destination or 'place' as well as a transportation 'link' and aims to improve the comfort and safety for all transportation modes, especially active transportation and transit.

Dutch Village Road is a major collector road that runs in a crescent. The 700m section that is the subject of this report connects Joseph Howe Drive at Bayers Road with Alma Crescent (Figure 1). The area has a mixture of commercial buildings, vacant lots, and apartments buildings. Recently approved Municipal Planning Strategy (MPS) and Land Use By-law (LUB) amendments resulting from the "Plan Dutch Village Road" project, are contributing to an increase in the density of residential and commercial buildings in the area. Over 20 construction permits have been issued in the previous five years, which represent over \$40.5 million of private investment.

The MPS promotes an urban commercial streetscape with reduced setbacks, commercial uses at grade, and parking to side, rear, or underground. It is expected to increase pedestrian traffic and active transportation infrastructure demand on Dutch Village Road within the next five years. Dutch Village Road has daily traffic volumes exceeding 16,000 vehicles per day.

The lack of sidewalk on the west side of the street, between Sunnybrae Avenue and Alma Crescent, has been cited as a safety issue and a functional deficiency for this busy commercial corridor. Since there is no curb or sidewalk on the west side, vehicular access to property is uncontrolled, and portions of off-street parking spaces encroach into the right-of-way. Most of this parking is perpendicular to the travel way causing motorists to drive in and back out into traffic, creating conflicts with other motorists, cyclists and pedestrians. Between January 2015 and December 2017, fifty-six collisions were documented in the corridor. Transit currently operates two routes along Dutch Village Road between Alma Crescent and Joseph Howe Drive

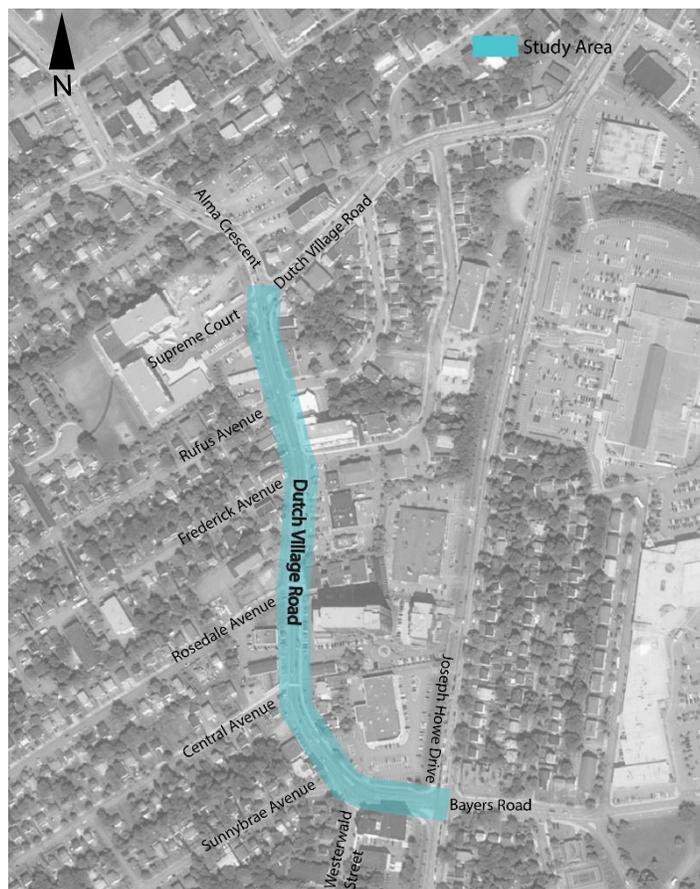


Figure 1: Extent of the Functional Design Study along Dutch Village Road

(Routes #28 and #137). Existing west-side transit stops are currently not accessible since there is no curb or sidewalk. There is also an opportunity to connect Dutch Village Road to the Chain of Lakes Trail.

To address the challenges outlined above, WSP was engaged in May 2018 to prepare a functional design for the section between Alma Crescent and Westerwald Street (~700m). This work was partially funded by the provincial Connect2 program and was completed in March 2019. Based on feedback from the public and internal stakeholders, staff undertook further functional planning work at both intersections to ensure better consideration of transitions for the proposed bicycle and pedestrian improvements at Bayers Road/ Joseph Howe Drive and at Supreme Court / Alma Crescent.

DISCUSSION

The primary objective of this project was to investigate options to improve conditions for pedestrians and cyclists on Dutch Village Road. In collaboration with a multi-departmental staff team, including Transportation & Public Works, Planning & Development and Halifax Transit, the consultants performed the following tasks:

1. Detailed investigation of existing conditions;
2. Explored three cross-sections and used an evaluation matrix along with feedback from the project steering committee to focus further on a preferred cross-section;
3. Prepared a functional design based on the preferred option;
4. Carried out public and stakeholder engagement related to the proposed option;
5. Identified necessary property acquisition and utility relocation requirements to support the proposed option.

The consultant's findings and recommendations are included in **Attachment A**.

EXISTING CONDITIONS

Active Transportation:

There is a wide concrete sidewalk without a buffer on the east side of the street. On the west side of the street, pedestrians currently walk on the shoulder of the road without any barrier separating them from travelling vehicles (approximately 8,000 southbound per day) or those backing in and out of parking. Most of the shoulder consists of a swale with periodic catch-basins to capture stormwater, providing for an uncomfortable walking / rolling experience. There are no bicycle facilities along Dutch Village Road, which limits Fairview residents' connection to existing and planned AT facilities nearby (the Chain of Lakes Trail connects Fairview to Bayers Lake, and a planned multi-use path on Bayers Road will provide an "all ages & abilities" bikeway connection from Fairview to the Halifax Peninsula).

Transit:

Halifax Transit currently operates two routes between Alma Crescent and Joseph Howe Drive (Routes #28 and #137). The Moving Forward Together Plan (MFTP) does not identify Dutch Village Road as a priority transit corridor and does not envision additional service here in the future. At present, because of the lack of curb and sidewalk on the west side, the bus stops require waiting passengers to stand on the shoulder of the road. The stops are currently inaccessible because a curb and level landing area are needed to deploy the ramp.

Traffic:

The cross-section on Dutch Village Road generally consists of two lanes of traffic that widen at the intersections. The roadway currently accommodates an average weekday traffic volume of approximately 16,700 vehicles per day. The width of the right-of-way is inconsistent throughout the corridor, ranging from

18.0m to 21.5m and increasing to approximately 27.0m near the Bayers Road / Joseph Howe Drive intersection.

Parking:

Most fronting commercial properties have off-street parking and / or loading on private property. Some parking spaces fronting Dutch Village Road currently encroach on the municipal right-of-way and are perpendicular to the roadway. The functional plan looked at reclaiming the municipal right-of-way for the active transportation improvements and providing parallel on-street parking spaces instead.

CROSS-SECTIONS AND CONCEPTUAL DESIGN OPTIONS

Consultants initially explored three cross-sections before settling on a preferred functional design option for the corridor. All the options included a new sidewalk between Alma Crescent and Sunnybrae Avenue on the west side of the street. From the three original options, Option 2 was determined to best satisfy the project's goals and objectives and was developed further to form the recommended option. Figures 3-5 provide a description and summary of key advantages and disadvantages of each cross-section.

Please note that the figures are diagrammatic and are not intended to illustrate detailed features. Detailed design for each section of the corridor will be informed by the functional design drawings developed as part of this plan. The detailed design process will include a more focused investigation of the constraints and opportunities for each section. Efforts will be made to improve elements of the design where possible; for example, increasing the width of cross section elements such as the buffer between the traffic lanes and the bicycle lanes. The detailed design process may also reveal physical constraints not identified in the functional design that require changes to the configuration of the corridor or ROW expansion. During detailed design, any exceptions to municipal design standards will need to be identified and presented to HRM's Variance Request Committee for review and approval.

Option 1: On-Street Bicycle Lanes on Both Sides of the Street; Sidewalk on West



Figure 2: Cross-section of Option 1

Description:

- New sidewalk on the west side of the street.
- On-street bicycle lanes on both sides of the street;
- The bicycle lanes would be separated from traffic using hatched paint lines or flexible bollards;
- All options include about the same amount of parking spaces that will be located on the west side of the street.

Advantages:

- No changes to the sidewalk on the east side of the street;
- Addition of a 1.8m sidewalk + 0.9m buffer on the west side;
- Easy to construct.

Disadvantages:

- The bicycle lanes would be interrupted at the bus stops;
- Bollards are not ideal in terms of maintenance;
- If bollards not used, there is potential for misuse of curb space by illegal parking and/or loading;
- Lack of space for snow storage; parking spaces could potentially become snow storage during major snow events.

Option 2: Raised Bicycle Lane on West Side & On-Street Bicycle Lane on East Side; Sidewalk on West

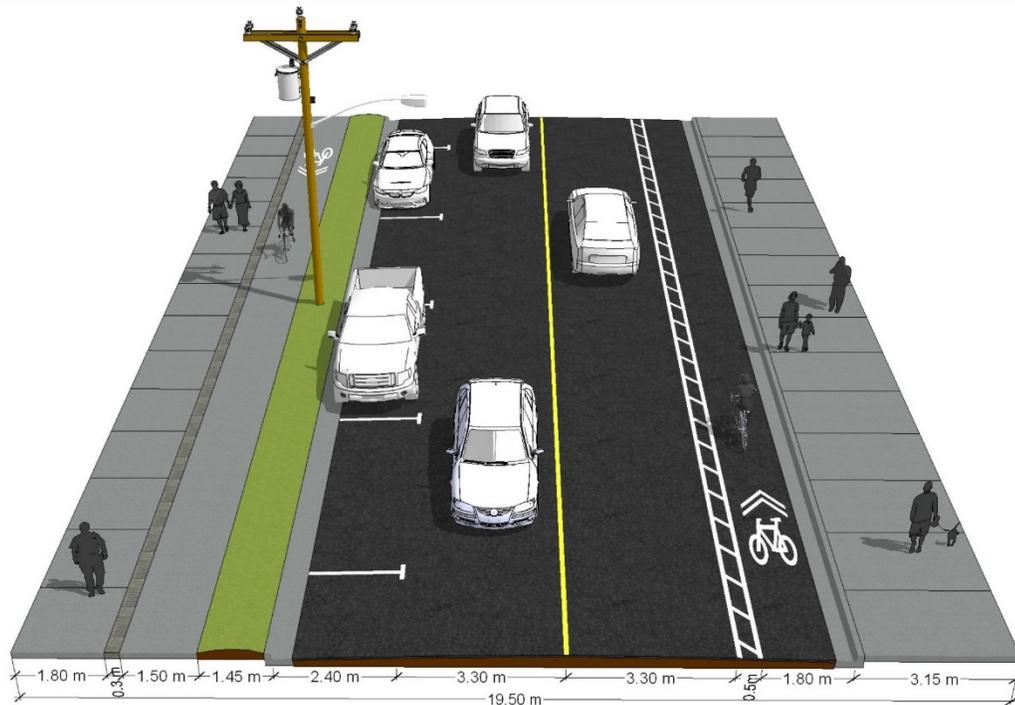


Figure 3: Cross-section of Option 2

Description:

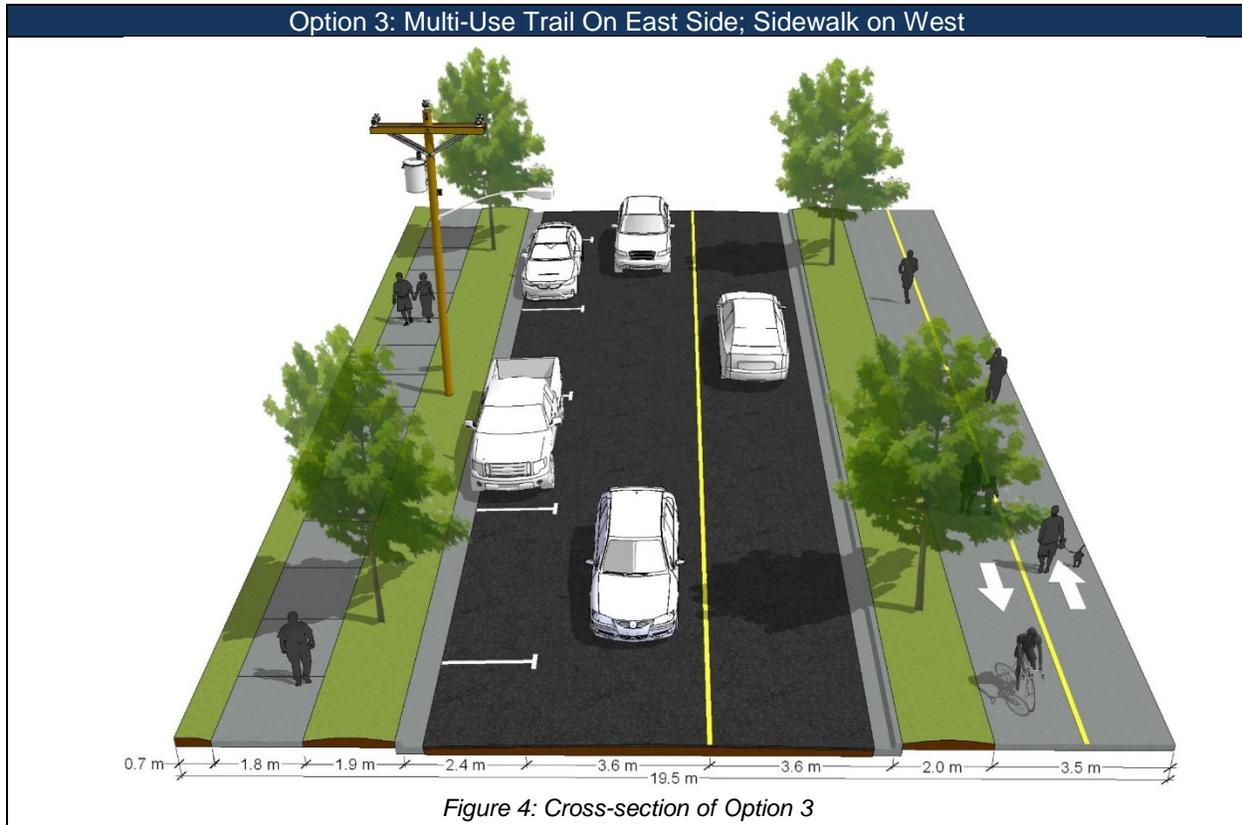
- New sidewalk on the west side of the street.
- Raised bicycle lane on the west side of the street;
- Distinction between the sidewalk and the raised bicycle lane will be achieved using a different surface material;
- On-street bicycle lane on the east side of the street;
- All options include about the same amount of parking spaces that will be located on the west side of the street.

Advantages:

- No changes to the sidewalk on the east side of the street;
- On-street bicycle lane on the east side can be installed without any curb modification;
- Raised bicycle lane is appropriate for the high traffic volumes present on Dutch Village Road;
- Bicycle / vehicle conflicts are reduced by the physical separation of the raised bicycle lane
- Addition of a sidewalk on the west side.

Disadvantages:

- The bicycle lane on the east side would be interrupted at the bus stops;
- Bollards would limit illegal parking/ loading in the bicycle lane but are challenging to maintain;
- Inconsistent bicycle facility type along the corridor;
- Lack of space for snow storage; parking spaces could potentially become snow storage during major snow events.
- Difficult to maintain.



Description:

- New sidewalk on the west side of the street;
- Replaces the existing sidewalk on the east side with a 3.5m multi-use pathway;
- The sidewalk and multi-use trail have buffers separating them from traffic.
- All options include about the same amount of parking spaces that will be located on the west side of the street.

Advantages:

- Seamless tie-in with the Chain of Lakes Trail.
- Presents a better environment for tree survival with adequate soil structure and species selection.
- Availability of space for snow storage.

Disadvantages:

- Requires removal of existing sidewalk on the east side, which is currently in good condition.
- A multi-use trail on an urban commercial street with allowances for zero setback development and expected high pedestrian volumes would not be appropriate, as conflicts between pedestrians and cyclists would be challenging to manage.
- Two-way bicycle traffic on one side of a two-way roadway that has a high density of driveways and intersections is not appropriate and increases the collision risk between vehicles and people riding bicycles particularly in the contraflow direction. Curvature of the roadway, and local topography exacerbate this disadvantage.

Based on the analysis above, Option 2 was chosen to move forward for further development.

RECOMMENDED FUNCTIONAL DESIGN OPTION

To address the disadvantages associated with Option 2 described above, the possibility of installing raised bicycle lanes on both sides of the street was explored in more detail and is being recommended as the preferred option moving forward. Figure 5 illustrates the recommended cross-section along the corridor.

Figure 5: Preferred Cross-section



The following section describes the proposed changes and associated impacts.

Active Transportation:

Walking

- New sidewalk on the west side of the street, where there currently isn't any, will reduce exposure to conflicts with vehicular traffic.
- Include a buffer separating pedestrians from traffic where space allows.
- Narrower street crossings, crosswalks enhanced with rectangular rapid flashing beacons (RRFB).

Bicycling

- Protected bicycle lanes on both sides of the street connecting to the Chain of Lakes Trail (COLT) – which in turn provides a connection to planned bicycle facilities on Bayers Road (supports commuters between Fairview, Clayton Park and the Halifax Peninsula). Attachment E illustrates how the proposed Dutch Village Road bicycle facility relates to the larger plan as outlined in the IMP.

Transit:

All bus stops along the corridor will be accessible. Stops 6613, located on the east side of Dutch Village Road before Rosedale Avenue, & 6638, located on the east side of Dutch Village Road before Sunnybrae Avenue, will be consolidated and moved to between Central Avenue and Rosedale Avenue. The functional plan will enable the installation of a shelter on the west side if warranted in the future.

Parking:

The design will impact 24 parking spaces that currently encroach on the right-of-way by re-orienting these spaces from perpendicular to parallel and adding curbs with defined driveways. Five additional 15-min on-street parking spaces will be impacted with the proposed intersection improvements. However, the functional plan includes 30 on-street, parallel parking spaces with a net increase of 1 parking space. During major snow events, parking spaces could potentially become snow storage until clearance is complete.

With the anticipated parking technology, it would be possible to introduce paid parking in the area if desired to further encourage turnover along the commercial area and offer flexibility for patrons. The pay stations would be added concurrent with the construction of the proposed cross section.

Access Management:

The functional design includes access management improvements for the corridor particularly on the west side of the street. Currently, vehicles can enter and exit the street at any point, which increases the risk of conflict with other vehicles, pedestrians and cyclists. With the addition of curb and sidewalk driveways will be defined and access will be better managed.

Property Acquisition:

The functional plan identified several small parcels of land that are necessary to achieve the preferred cross section. These are largely the result of an irregular streetline, and one already includes some municipal infrastructure (a sidewalk). Staff have performed a sensitivity analysis on the functional plan proposed by WSP and reduced the number of required parcels from six to four. However, during the detailed design process, more lands may be identified.

Staff have already initiated the property acquisition process – if negotiations fail, there are two ways the municipality could proceed:

1. Some on-street parking spaces could be compromised to maintain priority on delivering the infrastructure required for pedestrians and cyclists.
2. Expropriate the lands necessary to achieve the desired cross-section.

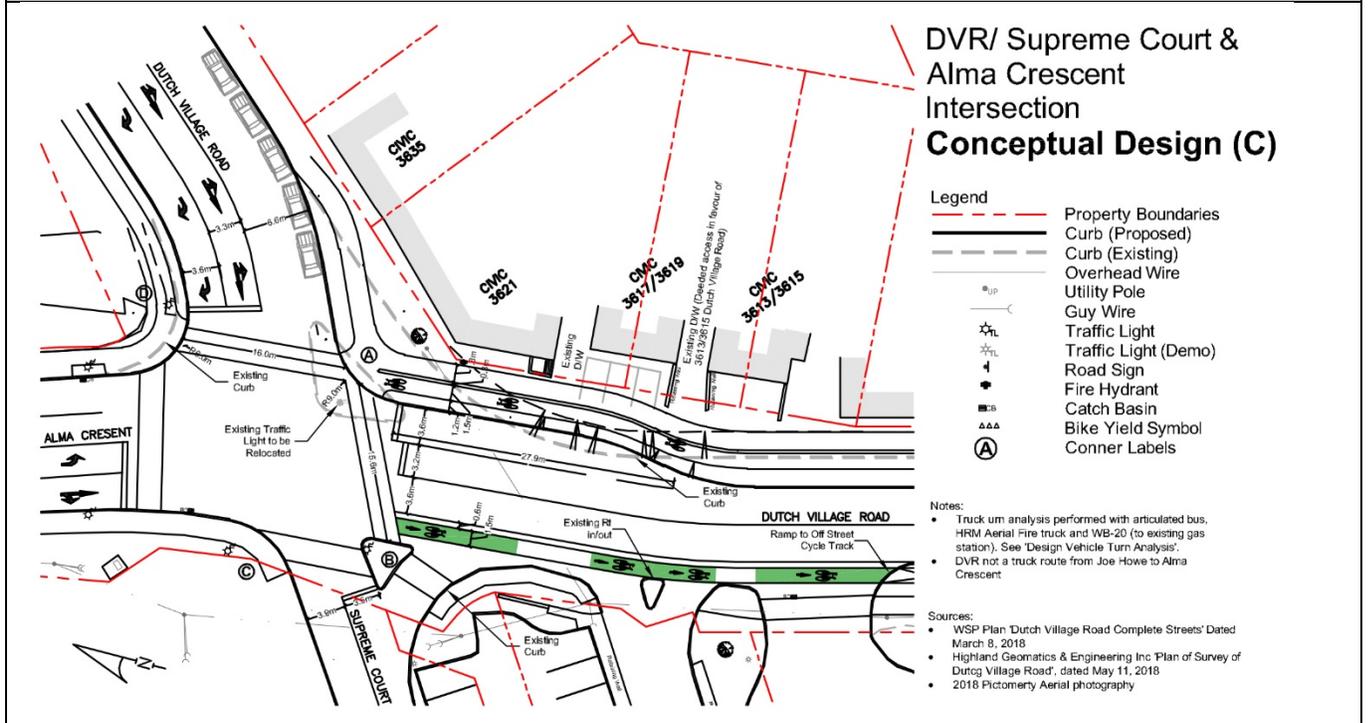
INTERSECTION IMPROVEMENTS

Proposed changes at intersections and the anticipated impacts are summarized in Table 1. A Multi-Modal Level of Service (MMLoS) and traffic impact analysis were completed to evaluate these changes on various modes of transportation – results are summarized in Attachments B and C. The traffic analysis for proposed conditions indicates that all movements currently operate within HRM's acceptable limits. Overall, the proposed changes are expected to have minimal impact on general vehicle operations on Dutch Village Road. Traffic analysis was based on AM and PM peak periods and included intersection delay and queue length.

Table 1: Summary of Intersection Modifications

| Intersection: Dutch Village Road (DVR) / Bayers Road at Joseph Howe Drive | |
|---|--|
| | |
| Proposed Changes | Impacts |
| <ul style="list-style-type: none"> • Extension of the proposed DVR protected bicycle lanes, providing a direct connection to the Chain of Lakes Trail (COLT). • Removal of the right turn channel on the eastbound approach of DVR • Removal of a receiving lane on the north side of DVR to accommodate the westbound protected bicycle lane. • Pedestrian crossings on the west side of the intersection are consolidated from two crossings of 30.5m to a single 18.5m crossing. • There is potential to create a bump-out at the eastbound receiving lane on Bayers Road and decrease the radius of the north east corner. These changes would enhance the pedestrian experience by reducing the crossing distance but do not necessarily need to be carried out at the same time. | <ul style="list-style-type: none"> • Removal of right turn channel: <ul style="list-style-type: none"> • Facilitates extension of DVR bicycle lanes; connects them directly to COLT. • Shortens overall crossing distance for the COLT. • Reduces car travel speed of right turning vehicles. • Has insignificant Impacts to vehicle traffic because space remains for a dedicated right turn lane. • Impacts to traffic from removal of the north side receiving lane on DVR are not expected to be significant because there is only one westbound through lane on Bayers Road. • The changes will improve the pedestrian and cyclist environment as illustrated in Attachment B (MMLOS analysis). |

Intersection: Dutch Village Road (DVR) at Supreme Court / Alma Crescent



Proposed Changes

Impacts

- A raised protected bicycle lane on the east side.
- A painted bicycle lane on the west side (recommended to avoid a bumpy ride resulting from crossing multiple driveways if bicycle lane was raised in this location. Transition to raised protected bicycle lane takes place beyond gas station driveway).
- Loss of approximately five 15-min parking spaces between Alma Crescent and Deal Street
- Side street parking is available with observed low occupancy
- Perpendicular parking of abutting property, civic 3617/3619, encroaches on HRM right-of-way. This plan reclaims the space for a sidewalk, bicycle lane, and buffer.
- Removal of right turn channel on south east corner (corner "A") is necessary to extend the bicycle lane to the intersection. This will also improve visibility and mitigate pedestrian and vehicle conflicts.
- Addition of one parking space on DVR fronting Civic 3635.

- Impacts to traffic are not expected to be significant.
- The MMLOS analysis suggests that the conditions for cyclists and pedestrians will slightly improve with the reduction of uncontrolled conflict points resulting from the removal of the right turn channel. Conditions for transit, goods movement and automobiles will remain relatively the same.
- The crossing distance on the north side of Dutch Village Road will decrease from two crossings of about 21m to 16.0m. The crossing distance isn't further decreased to avoid vehicle conflict paths introduced with the removal of the right turn channel. To accommodate this, staff propose changing the signal timing plans to reflect the increase in the Flash Don't Walk time for the NB approach from 11 seconds to 16 seconds and for the EB & WB approach from 10 seconds to 16 seconds.

Streetscaping

Streetscaping was not a consideration of the functional planning process; however, the corridor was subsequently evaluated using various criteria being developed internally to assess potential areas for streetscaping in the Regional Centre. While this corridor is outside that area, it rated reasonably high due to it being the 'main street' of an existing and growing pedestrian oriented commercial district, along with the opportunity to integrate streetscaping with other construction (i.e. of this new AT infrastructure and potentially with ROW reinstatement following redevelopment of adjacent property).

Several streetscaping opportunities were also identified, including but not limited to: installation of various site furnishings (e.g. bike racks, benches, waste receptacles); the use of decorative materials (e.g. unit pavers in the boulevard or pedestrian lighting); tree planting (likely requiring soil cells or trenches to provide soil below the urban hardscape); and horticultural planting in the realigned median at Sunnybrae Avenue. Strategies to mitigate the impact of overhead wires could also be considered, like burying the laterals, or using higher poles to place overhead electrical wires beyond sightlines.

As described in the Financial Implications section, should Council approve the recommendations of this report, minor streetscaping opportunities will be explored further through the detailed design phase and included in the project's construction if feasible.

FINANCIAL IMPLICATIONS

It is expected that detailed design of this project will be undertaken by HRM staff. A Class D cost estimate for construction is \$1.8 million, which includes new curb and sidewalk on the west side of the street, protected bicycle lanes, and related street and intersection improvements. The estimated annual additional operating costs of the proposed pedestrian and cyclist improvements are approximately \$12,000.

An additional capital allowance of \$400,000 should also be considered to undertake some streetscaping improvements if feasible (as described above) in this emerging pedestrian-oriented commercial district (as described in the Discussion section). Dutch Village Road is currently outside the coverage of HRM's Enhance Maintenance Area (EMA) and is in a 4-year contracted winter maintenance area. The contract would likely need to be amended to capture the additional costs of maintenance. There will also be consideration to potentially add the Dutch Village Road area to the EMA at the end of the contract period with consideration of additional staffing and capital requirements for service, at least for the summer period.

Should Council direct staff to continue with this project, property acquisition will continue where identified in the functional plan through the detailed design phase and construction will target 2021 at the earliest. Incidental costs associated with the project will continue to be funded through other capital accounts.

The 20/21 proposed capital budget includes supplementary sheet Mobility2 for Major Strategic Modal Corridor: Dutch Village Road and identifies \$50,000 in 20/21 to support in-house detailed design, and \$2,250,000 in 21/22 for construction. Acquisition of properties is expected to cost approximately \$85,000 and will be funded through CT190009-IMP Land Acquisition.

RISK CONSIDERATION

Staff have initiated the property acquisition process for the parcels needed to achieve the design goals. If negotiations fail, there are two ways the municipality could proceed:

1. The preferred cross-section could be adjusted accordingly, likely by compromising some proposed on-street parking spaces.
2. Expropriate the lands necessary to achieve the desired cross-section.

The impact and likelihood of the risk that businesses will experience less store traffic due to parking changes is unlikely as the preferred option contains an equivalent number of on-street parking spaces, with the

orientation and location of parking changed. Most businesses also have private off-street parking and there is more on-street parking on the side streets. The increased residential densification happening along Dutch Village Road will increase foot traffic.

The risks of not proceeding with the project include continued pedestrian-vehicle conflict on a roadway with over 16,000 vehicles per day and no sidewalk on one side; continued collision risks related to the configuration of the encroaching perpendicular parking; continued allowance of relatively high-speed turns in an increasing pedestrian oriented commercial district; continued gap in bicycle connection between Fairview and the Chain of Lakes Trail and planned Bayers Road multi-use pathway.

Properties fronting on this corridor were 'up-zoned' in 2016 to allow higher residential densities with zero setback to the front lot line and encouragement of commercial uses at ground level. Commercial uses require level pedestrian access and egress, so it is critical that detailed design and construction of the sidewalk be advanced. Development interest in the area is increasing and the sooner the new sidewalk is designed and built, the easier it will be to match the level of the new sidewalk with the first-floor level of abutting buildings.

COMMUNITY ENGAGEMENT

Attempts were made to have one-on-one meetings with all property owners whose customer parking is currently encroaching into the public ROW to make them aware of the project and its impact on their use of the ROW. Most were aware that their front yard parking was encroaching and understood the rationale for introducing curb and associated driveways (i.e. access control in place of currently unrestricted access to all west side properties where curb is absent). Some expressed concerns that the bicycle lanes were not needed; however, the main impact to their use of the ROW will result from the introduction of curb and sidewalk, whether a bicycle lane is included or not.

The preferred functional design (excluding the intersections) was presented at a public meeting on February 20, 2019 at the Centennial Arena. The property owners with parking encroaching on the right-of-way were invited to attend via an email and / or a phone call. Other residents of HRM were notified of the public meeting through a combination of advertisements on social media (i.e. Facebook and Instagram), and a paid advertisement in the Community Herald. In addition, a Shape Your City online engagement portal was established.

Feedback was collected via in-person comments, and an online survey. The information obtained from the public was used to evaluate their response to the design. Survey results are summarized in Attachment D. Most of the open house attendees and survey respondents were in favor of the project. Many raised concerns regarding the exclusion of the intersections from the functional plan – these have since been addressed, as described in the Discussion section. There was also a sentiment expressed for additional streetscaping along Dutch Village Road.

ENVIRONMENTAL IMPLICATIONS

This project supports the *Council Priority Outcome* of building healthy, livable communities: it aims to make it more convenient for residents to choose sustainable transportation options for everyday transportation. This is reflected in the improvements to active transportation infrastructure, which will support more people to walk, cycle, and get to the bus, promoting a shift in non-auto modes and a reduction in greenhouse gas (GHG) emissions.

ALTERNATIVES

Halifax Regional Council could choose not to approve the recommendations outlined in this report and could choose from the alternatives presented below:

1. Direct the CAO to proceed with alternative cross-sections / conceptual design options, or some variation thereof. This may require a supplementary staff report. These options are not recommended for the reasons outlined in the Discussion section of this report.
2. Direct the CAO to abandon the project and that make no changes to Dutch Village Road. This alternative is not recommended as it is not consistent with the policy direction outlined in the IMP.

ATTACHMENTS

Attachment A: Dutch Village Road Functional Design Plan (WSP)
Attachment B: Intersection Improvements & Multimodal Impact Analysis
Attachment C: Intersection Functional Design Drawings
Attachment D: Shape Your City Results
Attachment E: Bicycle Network in the IMP

A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

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HALIFAX REGIONAL MUNICIPALITY

DUTCH VILLAGE ROAD COMPLETE STREET FUNCTIONAL PLAN

FINAL REPORT



EXECUTIVE SUMMARY

Council recently approved the “Plan Dutch Village Road” policy that will promote an urban commercial streetscape, which may include modified setbacks, commercial uses at grade and parking to the side or the rear of buildings. HRM has identified the need to determine the right-of-way requirements to provide a Complete Street design, which will include a sidewalk on the west side of Dutch Village Road, an All Ages and Abilities (‘AAA’) bicycle facility, transit upgrades and enhanced streetscape to promote area livability. The ongoing development of a planning strategy to create growth opportunities and an urban commercial streetscape on Dutch Village Road, makes the street an ideal candidate for application of the Integrated Mobility Plan’s Complete Street principles.

The study area for this project is generally from building face to building face along the east and west sides of Dutch Village Road between Alma Crescent and Westerwald Street (700m approx.). The Dutch Village Road Complete Street Functional Plan includes a series of cross sections and concept design options to improve Dutch Village Road. The following are summaries of the concept design options.

THREE CROSS SECTIONS

WSP prepared three cross sections to modify Dutch Village Road which included:

- 1) **On-Street Bicycle Lanes:** On-street bicycle lanes with a new concrete sidewalk on the west side of the street. The bicycle lanes are 1.8m in width and have a 0.5m buffer area from the travel lane. This buffer area could be hatched paint lines, flexible bollards or pre-cast curb.
- 2) **Raised Bicycle Lane on West Side & On-Street Bicycle Lane on East Side:** A new protected and raised bicycle lane and sidewalk on the west side of the street. On the east side, a separated bicycle lane is proposed so that the existing curb and sidewalk can remain unchanged. The raised bicycle lane is above the street level and is typically at sidewalk level. Distinction between the sidewalk area and the raised bicycle lane can be achieved using different surface materials to delineate where the pedestrians and bicyclist travel.
- 3) **Multi-Use Trail on East Side:** The existing sidewalk on the east side of the street would be replaced with a 3.5m multi-use pathway. On the west side of the street, a concrete sidewalk is added. Both the sidewalk and the multi-use pathway have a buffer area separating them from the street, allowing for street trees and other street amenities. The intent of the multi-use pathway is for pedestrians, cyclists and other active transportation users to share the space. Users are encouraged to keep to the right when travelling and overtake slower users on the left.

Based on an evaluation analysis along with feedback from the Technical Committee and key stakeholders, two alternatives of Option #2 were prepared, and Options #1 & #3 were removed from consideration.

TWO CONCEPT DESIGNS

To focus on a preferred solution, WSP prepared two concept designs based on the *Raised Bicycle Lane on West Side & Buffered Bicycle Lane on East Side* (#2). Both options are adaptable to the changing right-of-way width within the corridor. Opportunities are available to include on-street parallel parking or to extend the sidewalk and create a bus loading area. The two concept designs options are described below:

- A) **Raised Bicycle Lane on West Side & On-street Bicycle Lane on East Side:** Option A features a separated on-street bicycle lane on the east side of the street and a raised bicycle lane along with a new sidewalk on the west side. Physically separating the bicycle lane from the vehicle travel lane is beneficial to reducing conflict between bicycles and vehicles. Since new curb and sidewalk is required on the west side of the street, constructing a raised bicycle lane along side it would be cost effective. Since the existing sidewalk on the east side of the street was viewed as being in satisfactory condition, an on-street bicycle lane with a physical buffer was included.

- B) Raised Bicycle Lane on West & East:** Option B includes a raised bicycle lane on both sides of the street. Having both bicycle facilities separated (both vertically and horizontally) increases the level of comfort and provides quality cycling infrastructure along Dutch Village Road. There is added cost to this option compared to Option A, as the existing curb on the east side of the street will need to be removed and rebuilt.

Based on feedback from the Technical Committee and key stakeholders, Option B was the preferred option.

PREFERRED OPTION

The preferred functional plan put forward in this study creates an improved pedestrian realm with sidewalks on both sides of the street and space for street amenities such as benches, waste receptacles, bicycle parking, transit waiting areas and vegetation. An All Ages and Abilities (‘AAA’) bicycle facility is established by creating raised bicycle lanes, at sidewalk level, that includes a tactile buffer between them and the sidewalk. The travel lanes on the street are narrowed and better defined to help control vehicle travel speeds and shorten crossing distances while maintaining full functionality of traffic operations. The plan improves access management to properties by eliminating street conflicts created by “nose-in” parking and replacing that with defined driveways and on-street parallel parking. The proposed bicycle facilities on Dutch Village Road will connect into the existing Chain of Lakes Trail facilities with future opportunities on Westerwald Street to be designated as a Local Street Bikeway.

The preferred functional plan not only improves the many safety and functional operations of the existing street but creates an environment in which the Dutch Village Road area can thrive and grow.

CONCLUSION & RECOMMENDATIONS

Based on the background review, stakeholder and public engagement, as well as conceptual design, the following recommendations have been developed for consideration by the Municipality.

NEXT STEPS

- It is recommended to include the existing intersections of Bayers Road/Joseph Howe Drive and Alma Crescent/Dutch Village Road within the scope of the detailed design. This will assist with the continuity of the bicycle lanes, connecting to the Chain of Lake Trail and completing the necessary improvements at the signalized intersection.
- While initial engagement with abutting property owners was completed during the conceptual design, it is recommended to further engage with property owners, who may be affected by the proposed changes, to modify the design as needed at the 60% detailed design stage.
- Complete the detailed design of Dutch Village Road, acquire any needed property and relocate the necessary utility poles. Other items to consider during detailed design include:
 - Review driveway locations and width to ensure they meet the needs of users.
 - Review width of curb to allow enough space for emergency vehicles.
 - Review any grade constraints/ ROW space for retaining walls.
 - Determine where space is available to include bus shelters.
 - Review potential underground conflicts, such as catchbasin relocations.
 - Review opportunities to include trees and landscape features along corridor where is space is available.
- Construct the project with the proposed sidewalk and the raised bicycle lane on the west side and the raised bicycle lane on the east side of Dutch Village Road.
 - There may be potential to construct in two phases with Phase 1 including the section from Joseph Howe Drive/Bayers Road intersection to Sunnybrae Avenue with the realignment of the Shoppers Drug Mart Driveway and Phase 2 would be the completion of the remainder of the corridor. Phase 2 may also be completed in two stages with completing the sidewalk and raised bicycle lane on the west side of Dutch Village Road with a painted bicycle lane on the east side. Later the raised bicycle lane on the east side could be added. Completing Phase 2 all at once would be ideal as it would only disrupt the community for a construction season.



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APPENDICES

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1 INTRODUCTION & BACKGROUND

1.1 DUTCH VILLAGE ROAD

Council recently approved the “Plan Dutch Village Road” policy that will promote an urban commercial streetscape, which may include modified setbacks, commercial uses at grade and parking to side or rear of building. HRM has identified the need to determine the right-of-way requirements to provide a Complete Street design, which will include a sidewalk on the west side of Dutch Village Road, an All Ages and Abilities (‘AAA’) bicycle facility, transit upgrades and enhanced streetscape to promote area livability.

The study area for this project is generally from building face to building face along the east and west sides of Dutch Village Road between Alma Crescent and Westerwald Street (700m approx.), shown in Figure 1-1.



Figure 1-1: Study Area

1.2 HISTORY OF DUTCH VILLAGE ROAD

Dutch Village Road is a mixture of commercial buildings, vacant lots and apartment buildings and is positioned for the density of residential and commercial properties to be enhanced over the next five years.

The lack of sidewalk on the west side of the street has long been cited as a safety issue and functional deficiency for this busy commercial corridor. The best fix has been the subject of resident input and student projects for many years, but no concerted effort to develop a solution has been made until now.

1.3 PLANNING CONTEXT

In 2013, Regional Council initiated a planning process to establish comprehensive planning policies that enable additional commercial/residential developments on the lands located surrounding Dutch Village Road and neighbouring areas. This process was referred to as Plan Dutch Village Road. Implementation of this plan is expected to increase pedestrian traffic and infrastructure demand on Dutch Village Road within the next five years. Therefore, the municipality needs to resolve the right of way requirements for installing bicycle lanes, a sidewalk on the west side of the street, transit upgrades, and general area street improvements related to livability. A plan, even if delivered in stages, will allow redeveloping properties to be shaped in a way that compliments the plan and proactively identifies portions of properties that may be required for street



Figure 1-2: Plan Dutch Village Road
[ShapeYourCityHalifax.ca]

purposes. In 2016 the policy changes were approved, and they allow increase in residential and commercial density on lands surrounding Dutch Village Road.

In 2014, HRM completed the “Making Connections: 2014-2019 Halifax Active Transportation Priorities Plan” which illustrated the priority projects for creating active transportation connections across the municipality (Figure 1-3).

More recently, Halifax Regional Council unanimously approved the Integrated Mobility Plan (2017). One of the foundational policies in the Plan is that of Complete Streets, which is an approach to street design and maintenance that aims to improve the comfort and safety of users of all transportation modes including pedestrians, bicyclists and transit users.

The complete streets approach also includes the idea that street design should take into consideration all the modes, if trade offs are needed due to limited ROW, that mode priority be informed by the maps in the IMP. In the case of DVR, this project was initiated to address the major sidewalk gap. The street is a candidate route for bicycles facilities in the AT Plan and the functional planning goals aim to resolve how facilities for both modes can be accommodated.

The IMP included the identification of strategic sidewalk projects within HRM (Policy 3.1.5 (a)) specifically Action 69, to deliver the following priority sidewalk connections by 2020 on Dutch Village Road shown in Figure 1-4. The elements that make up a Complete Street, taken from the Integrated Mobility Plan are shown in Figure 1-5.



Figure 1-3: Making Connections: AT Priorities Plan



Figure 1-4: Existing Sidewalks (IMP, Figure 14 & 15, Page 89)



Figure 1-5: Complete Street Features (IMP, p 56)

1.4 STUDY OBJECTIVES

The primary goal of this project is to follow the Integrated Mobility Plan Complete Street Principles in developing and evaluating design options for Dutch Village Road to include a ‘AAA’ bicycle facility with sidewalk on the west side and enhanced transit facilities. Specific project objectives include:

1. Complete a detailed investigation of the existing conditions within the study area, using available topographical survey, GIS mapping and the establishment of the functional operations of the study area.
2. Develop an understanding of existing active transportation needs from past comments/discussions with HRM.
3. Review and verify the existing legal and topographical survey provided by HRM and identify the right-of-way along the study corridor.
4. Prepare three cross sections with a ‘AAA’ bicycle facility and sidewalk on the west side of Dutch Village Road. Engage with HRM Internal Technical Committee to review and select two options to proceed with conceptual design.
5. Prepare two conceptual designs based on feedback from HRM Technical Committee and engage with them to review and select the preferred design.
6. Meet with abutting business and property owners and other stakeholders to discuss the preferred functional design option and impacts.
7. Present the preferred functional design option to the general public to identify the relevant constraints and obtain feedback on the preferred option.
8. Revise the preferred functional design option as necessary and prepare Class ‘C’ cost estimates for Dutch Village Road upgrades.
9. Prepare a final report that summarizes the findings of the study and also includes the functional design drawings with phasing recommendations for Dutch Village Road.

2 EXISTING CONDITIONS & OPERATIONS

Dutch Village Road is a major collector that runs 900m in a loop, connecting Joseph Howe Drive with Alma Crescent. Roadway characteristics are summarized in Table 2-1.

Table 2-1: Roadway Characteristics

| DUTCH VILLAGE ROAD (ALMA CRESCENT TO JOSEPH HOWE DRIVE/BAYERS RD INTERSECTION) | |
|---|---|
| TRAFFIC LANES | <p>Generally, two wide lanes of traffic running north to south from Alma Crescent to Westerwald Street.</p> <p>Lanes typically accommodate a vehicle to pass another that is stopped to turn left or a bus at the curb without impeding oncoming traffic.</p> <p>ROW is very inconsistent throughout the length of the corridor, varying from approximately 18.0m to 21.5m, increasing to as much as 27.0m nearing the approach to the Bayers Road and Joseph Howe Drive intersection.</p> |
| TRAFFIC VOLUMES | <p>Traffic data obtained by HRM Traffic Management in July 2011, indicate weekday two-way traffic volumes of approximately 16,700 vehicles per day (vpd) on Dutch Village Road between Westerwald Street and the intersection of Bayers Road at Joseph Howe Drive.</p> <p>Turning movement counts were provided for the intersections of Dutch Village Road at Alma Crescent and Bayers Road at Joseph Howe Drive. Additional 2018 turning movement counts were conducted at Central Avenue, Rosedale Avenue and Deal Street.</p> |
| PUBLIC TRANSIT | <p>Dutch Village Road is serviced by Halifax Transit Routes #28 (Bayers Lake) and #137 (Clayton Park Express). In August 2018, two new stop locations were added, see Figure 2-1. The Moving Forward Together plan does not propose additional service in the future.</p> <p>There are several transit stops on the corridor however, none of the stops have rider amenities such as a shelter or bench, although the stop at Sunnybrae has a concrete pad with no shelter.</p> <p>Transit data collected by Halifax Transit indicated that there were typically 4 transit riders during each of the AM and PM peak hours on Dutch Village Road.</p> |
| PARKING/LOADING | <p>One-hour spaces on the east side of the street, north of Deal Street. There is on-street parking available on side streets near Dutch Village Road. Some of this parking is time limited to one hour or fifteen minutes to encourage turnover for nearby business. Figure 2-2 shows parking supply on side streets connecting to Dutch Village Road.</p> <p>Data on parking utilization is not available.</p> |
| PEDESTRIANS/BICYCLES | <p>There is concrete sidewalk on the east side of the street only (good to very good condition). The sidewalk varies from 1.5m to 2.5m in width and lacks a boulevard, which detracts from pedestrian comfort.</p> <p>On the west side of the street, pedestrians walk on a paved shoulder separated from the travel lanes by a painted shoulder line. The asphalt on the shoulder is generally in very poor condition. Most of the shoulder is formed as a swale with periodic catchbasins to capture stormwater, as seen in Photo 2-1.</p> <p>There are three locations on the street where marked crosswalks are provided: Central Avenue, Rosedale Avenue and Deal Street and are shown in Figure 2-2. Pedestrian data were collected at these crosswalk by WSP in 2018.</p> <p>There are no existing bicycle lanes along Dutch Village Road.</p> |
| UTILITIES | <p>There is existing infrastructure along Dutch Village Road which includes utility poles and underground stormwater management. There are approximately 19 utility poles on the west side and approximately 4 utility poles on the east side of Dutch Village Road.</p> |

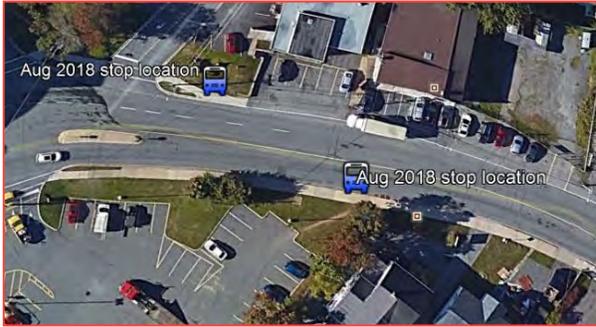


Figure 2-1: Recently Installed Transit Stop Locations on DVR



Photo 2-1: Water ponding in front of Scotiabank creates difficulties for pedestrians



Figure 2-2: Existing Features

2.1 DATA COLLECTION

2.1.1 LEGAL & TOPOGRAPHICAL SURVEY

HRM provided the detailed legal and topographic survey information of the study area from Highland Geomatics and Engineering on March 23, 2018, which included street widths, property boundaries, bus stop locations, street centrelines, existing trail locations and underground infrastructure. Aerial imagery and mapping was provided to identify the property boundaries and the right-of-way limits. The data was imported into AutoCAD drawings for use as the topographic base for the options review.

2.1.2 COLLISION HISTORY

Collision history data was provided by HRM with a summary of 56 collisions being documented between January 2015 and December 2017 inclusive. The most common type of collision was due to vehicles backing out of nose-in off-street parking stalls into the road and getting rear-ended. The collisions are illustrated in Figure 2-3.

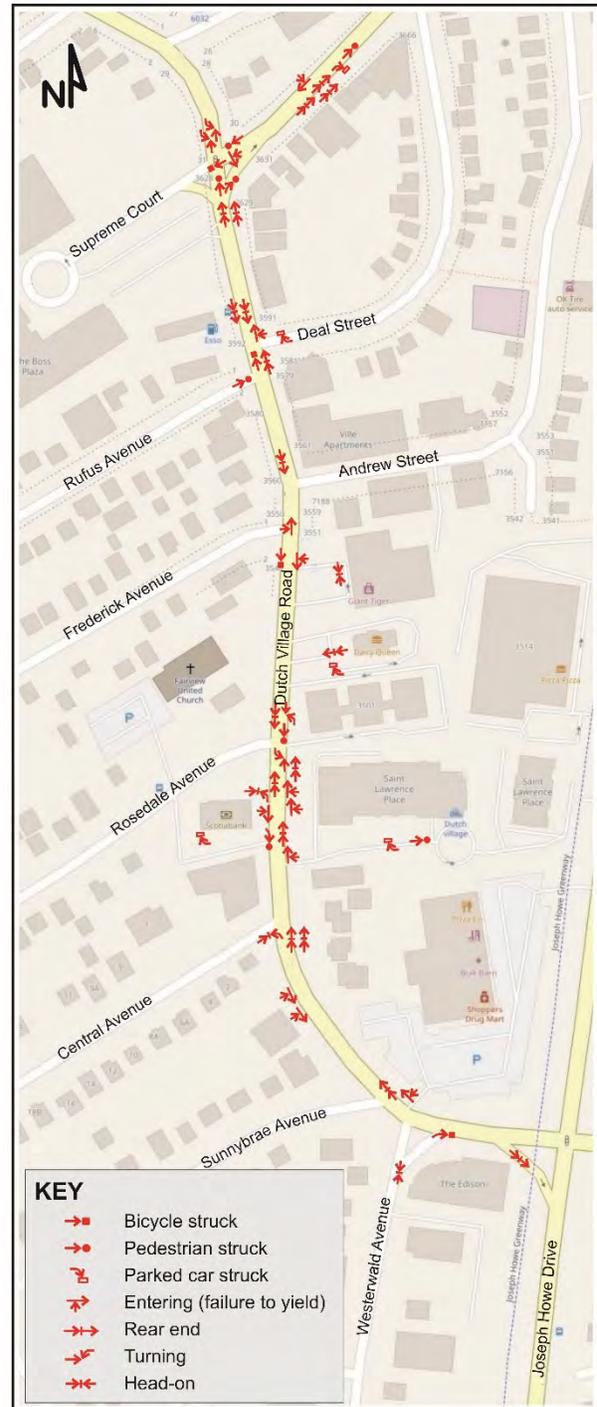


Figure 2-3: Three-Year Collision History

3 PROJECT APPROACH / FRAMEWORK

3.1 DESIGN OBJECTIVES/CONSIDERATIONS

The design objective for this project is to create a safe and convenient street for walking, bicycling and other modes of active transportation for people of all ages and abilities. Key considerations are summarized in Table 3-1.

Table 3-1: Project Considerations

| Factor | Evaluation Considerations |
|--|---|
| <p style="text-align: center;">Active Transportation (Pedestrians/Cyclists)</p> | <p>Dutch Village Road, with its proximity to the regional greenway network (the Chain of Lakes Trail and the planned Halifax Urban Greenway) and the presence of commercial destinations along its length, make it an important component of this network.</p> <p>Dutch Village Road has the potential to connect people on bicycles between the residential communities of Fairview and the Chain of Lakes Trail. It is a commercial destination for trail users and can serve as part of a bicycle network link between Fairview and the Halifax peninsula. For pedestrians, it links several closely spaced commercial/ mixed use destinations and serves as a part of the “first mile/ last mile” of transit journeys to the area.</p> <p>Evaluation of each design option based on pedestrian and cyclist accommodation will focus on the extent to which key inputs such as pedestrian/cyclist exposure to vehicular traffic (i.e. separation and crossing distances) are expected to change with implementation of each design option.</p> |
| <p style="text-align: center;">Vehicular Traffic</p> | <p>Dutch Village Road is two lanes wide and classified as a collector roadway. As such, it must maintain a balance between conveying traffic and providing access to abutting properties and side streets. Ideally, vehicular capacity should remain consistent with existing conditions.</p> |
| <p style="text-align: center;">Transit</p> | <p>Consideration must be given to maintaining effective operation of transit and minimizing interaction between vehicles, pedestrians, bicycles, transit buses and transit riders waiting and boarding/alighting. There is a light transit presence on this corridor and no transit priority measures are used.</p> |
| <p style="text-align: center;">Parking/Loading</p> | <p>As an active commercial area, the availability of space for parking and loading is important as most, but not all, fronting commercial properties have off-street parking/ loading. Measures to increase parking supply off-street and on side streets are preferable, as space for on-street parking will be limited once priority is given to active transportation users.</p> |

3.2 EVALUATION FRAMEWORK

Evaluation criteria were developed to inform a comparative analysis of options. These criteria are described below and were applied to the three concept design options outlined in Section 4 along with the existing conditions. The criteria listed in Table 3-2 are in no particular order and have not been assigned relative weighting. They are intended to identify strengths and weaknesses of the option being evaluated.

Table 3-2: Evaluation Criteria

| Criteria | | Evaluation Considerations |
|-------------------------|----------------------------|--|
| User Experience | Walking | A preferred user experience for walking would include adequate sidewalk width and separation from traffic. |
| | Bicycling | A preferred user experience for bicycling captures the elements of an All Ages and Abilities facility. That includes ease of comprehension on where to be and how to operate as a cyclist as well as a perception of safety and includes separation from higher volumes and speeds of motor vehicle traffic. |
| | Transit | A preferred user experience for transit users includes adequacy of waiting areas, convenience and visibility of stop locations, ease of boarding and alighting buses and adequate connecting facilities for pedestrians. |
| Modal Conflicts | Pedestrian-Vehicle | Each of the travel modes that will be accommodated within the corridor have potential to conflict with each other. Higher scores in this category are given when the modes are better separated so that physical conflict is reduced. |
| | Pedestrian-Bicycle | |
| | Bicycle-Vehicle | |
| Impact to Parking | On-street Parking/Loading | While provision of on-street parking is not essential, given that additional parking off-street or on side streets may accommodate any loss, it is seen as a valued feature. Some on-street loading areas are desirable for the commercial businesses. |
| | Off-street Parking | Sufficient off-street parking opportunities should be available to accommodate parking demand. |
| Roadway Characteristics | Existing AT Connections | Active transportation facilities need to connect well with the regional network. In this instance, a strong connection to the existing Chain of Lakes Trail is important. |
| | Access to Properties | In this category, higher scores are given when access to adjacent properties by vehicles are not hampered. |
| | Traffic Impacts | As a collector street, safe and functional flow of traffic needs to be maintained. Adequate lane widths are important factors. |
| | Transit Operations | Buses need to operate safely and efficiently within the corridor. While pulling buses out of the traffic flow is not viewed as necessary, providing safe areas for buses to stop and return to traffic is important. |
| | Green Space with Amenities | Better scores in this category are given to options that provide additional space within the street right-of-way for grass, trees and other vegetation as well as street furniture such as benches. |
| Other Considerations | Cost to Implement | Without going into detailed measurement and calculation, a general sense of the relative cost of each option is developed and evaluated. In general, options that preserve existing infrastructure score better than options that require new infrastructure to be constructed. |
| | Cost to Operate | The key elements to determining operating cost are maintenance and snow/ice removal. While physically separating elements of the street may benefit the users, it can make street maintenance more complicated and costly. |
| | Property Acquisition | Acquisition of additional property outside of the street ROW should be minimized, particularly where it would be costly or where it would greatly impact the existing land owner. |

4 CONCEPTUAL DESIGN OPTIONS

4.1 THREE CROSS SECTIONS

WSP prepared three cross sections to modify Dutch Village Road using the “Streetmix” online software and they are described and illustrated below.

OPTION #1: ON-STREET BICYCLE LANES

The first option (see Figure 4-1) includes on-street bicycle lanes with a new concrete sidewalk on the west side of the street. The bicycle lanes are a generous 1.8m in width and have a 0.5m buffer area from the travel lane. This buffer area could be hatched paint lines, flexible bollards or pre-cast curb. The bicycle lanes would be interrupted at bus stop locations and they are also not ideal in terms of maintenance.



Figure 4-1: Cross Section – Option #1

OPTION #2: RAISED BICYCLE LANE ON WEST SIDE & ON-STREET BICYCLE LANE ON EAST SIDE

This option (see Figure 4-2) creates a new protected and raised bicycle lane and sidewalk on the west side of the street. To minimize cost, a separated bicycle lane is proposed on the east side of the street, so that the existing curb and sidewalk can remain unchanged. The raised bicycle lane is above the street level and is typically at sidewalk level. Distinction between the sidewalk area and the raised bicycle lane can be achieved using different surface materials to delineate where the pedestrians and cyclist travel. Some options include concrete/asphalt, painted lines, surface materials (“dots”) or other slightly raised features from the normal surface.



Figure 4-2: Cross Section – Option #2

OPTION #3: MULTI-USE TRAIL ON EAST SIDE

Option #3 (see Figure 4-3) replaces the existing sidewalk on the east side of the street with a 3.5m multi-use pathway. On the west side of the street, a concrete sidewalk is added. Both the sidewalk and the multi-use pathway have a buffer area separating them from the street, allowing for street trees and other street amenities. The intent of the multi-use pathway is for pedestrians, cyclists and other active transportation users to share the space. Users are encouraged to keep to the right when travelling and overtake slower users on the left.



Figure 4-3: Cross Section – Option #3

4.2 OPTIONS EVALUATION

The evaluation framework outlined in Section 3.2 was applied to each of the three options described in Section 4.1. This evaluation, along with discussion with HRM staff, was used to distill these options to the two concept designs shown in Section 4.3. The evaluation also contributed to the determination of the preferred functional design (Section 4.4). To provide a cursory comparison of alternatives, each of the evaluation criterion was given equal weight and scored from one to five points, where five points represents where the criteria is best satisfied, and one point represents an instance where the criteria is not well met. The tabulation of this scoring is provided in Table 4-1 and the results of the evaluation are shown in Table 4-2.

The evaluation ranked Option #2 as highest. This was then used to develop two concept designs.

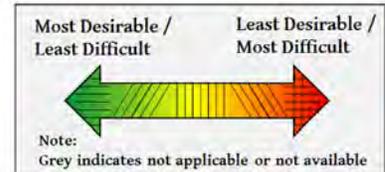
Table 4-1: Options Evaluation Matrix Scores

| Option | | Description | Evaluation Scoring | |
|-----------|-----------|--|--------------------|------------|
| Existing | West Side | No sidewalk | 43 | 102 |
| | East Side | Sidewalk only | 59 | |
| Option #1 | West Side | Separated bicycle lane with new sidewalk | 61 | 123 |
| | East Side | Separated bicycle lane | 62 | |
| Option #2 | West Side | Raised bicycle lane with new sidewalk | 63 | 125 |
| | East Side | Separated bicycle lane | 62 | |
| Option #3 | West Side | New Sidewalk | 51 | 111 |
| | East Side | Multi-use trail | 60 | |

Note: As bicycling is accommodated on only the east side of the street in Option #3, the same score is applied to both sides

Table 4-2: Options Evaluation Matrix

| Criteria | | Existing | | Option #1 | | Option #2 | | Option #3 | | Description |
|-----------------------------|----------------------------|-------------|---------------|------------------------|------------------------|---------------------|------------------------|---------------|-----------------|--|
| | | West Side | East Side | West Side | East Side | West Side | East Side | West Side | East Side | |
| | | no sidewalk | sidewalk only | separated bicycle lane | separated bicycle lane | raised bicycle lane | separated bicycle lane | sidewalk only | multi-use trail | |
| User Experience | Walking | Red | Green | Green | Green | Green | Green | Green | Green | All options accommodate pedestrians on both sides with added buffering from traffic. A concrete sidewalk is slightly more functional than an asphalt trail. |
| | Bicycling | Orange | Orange | Green | Green | Green | Green | Green | Green | Both on-street and raised bike lanes create a better user experience. The benefit of separating from traffic is dealt with in the Conflicts section. |
| | Transit | Red | Green | Yellow | Yellow | Yellow | Yellow | Green | Green | Better transit passenger waiting area are created with all options. With Options 1 & 2, transit passengers will have to cross a bicycle path when boarding/alighting buses. |
| Modal Conflicts | Pedestrian/Vehicle | Red | Green | Green | Green | Green | Green | Green | Green | Pedestrian street crossings are shorter with raised bicycle lanes compared with separated bicycle lanes. With no sidewalk in existing conditions, conflict level is high. |
| | Pedestrian/Bicycle | Green | Green | Green | Green | Green | Green | Grey | Red | Pedestrian movements in a commercial area are less "linear" and more random, making a multi-use trail more prone to conflict. |
| | Bicycle/Vehicle | Orange | Orange | Green | Green | Green | Green | Grey | Green | Bicycle/vehicle conflicts are reduced by the physical separation of a raised bike lane whereas an on-street facility is at street level. |
| Parking Impact | On-street Parking/ Loading | Red | Red | Yellow | Green | Yellow | Green | Yellow | Green | Some new on-street parking/loading spaces on east side are created with all options. |
| | Off-street Parking | Green | Green | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | No difference between options. All options result in parking decrease, primarily "off-street" spaces within the street right-of-way. |
| Road Characteristics | Existing AT Connections | Orange | Orange | Green | Green | Green | Green | Green | Green | Tie-in to COLT is more seamless with a multi-use trail. Other options require some type of transition. |
| | Access to Properties | Orange | Orange | Green | Green | Green | Green | Green | Green | No difference between options. All options reduce and consolidate access points. |
| | Traffic Impacts | Green | Green | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | Some existing turn storage space is lost in all options. |
| | Transit Operations | Orange | Green | Green | Green | Green | Green | Green | Green | Extra street spaces allows for transit pull-outs. Bus pull-offs will need to encroach into on-street bicycle lanes. Bus bulbs (transit priority) can be implemented with raised bicycle lanes. |
| | Green Space with Amenities | Red | Orange | Green | Green | Green | Green | Green | Green | Raised bicycle lane provides extra green space between buffer and bike lane. |
| Other Considerations | Cost to Implement | Green | Green | Yellow | Yellow | Orange | Yellow | Yellow | Red | Option #3 requires the existing east side sidewalk to be reconstructed. |
| | Cost to Operate | Green | Green | Yellow | Yellow | Yellow | Yellow | Green | Red | Separated bike lanes add cost to snow removal from streets. Raised bike lanes add complexity to sidewalk snow clearing. |
| | Property Acquisition | Green | Green | Yellow | Yellow | Yellow | Yellow | Yellow | Yellow | All options require some small amount of property acquisition. |



4.3 TWO CONCEPT DESIGNS

To focus further on a preferred solution, WSP prepared two concept designs based on Option #2. Both options are adaptable to the changing right-of-way width within the corridor. Opportunities are available to include on-street parallel parking or to extend the sidewalk and create a bus loading area. The two concept designs are described and illustrated below.

OPTION A: RAISED BICYCLE LANE ON WEST SIDE, ON-STREET BICYCLE LANE ON EAST SIDE

This concept is illustrated in Figures 4-4, 4-5 and 4-6. It features a separated on-street bicycle lane on the east side of the street and a raised bicycle lane along with a new sidewalk on the west side. Physically separating the bicycle lane from the vehicle travel lane is beneficial to reducing conflict between bicycles and vehicles. Separating an on-street bicycle lane laterally from the travel lane can achieve this, but also creating vertical separation between the two facilities magnifies that benefit. Since new curb and sidewalk is required on the west side of the street, constructing a raised bicycle lane along side it would be cost effective. Since the existing sidewalk on the east side of the street was viewed as being in satisfactory condition, an on-street bicycle lane with a physical buffer was included.



Figure 4-4: Concept Design – Option A (Typical)



Figure 4-5: Concept Design – Option A (Parking)

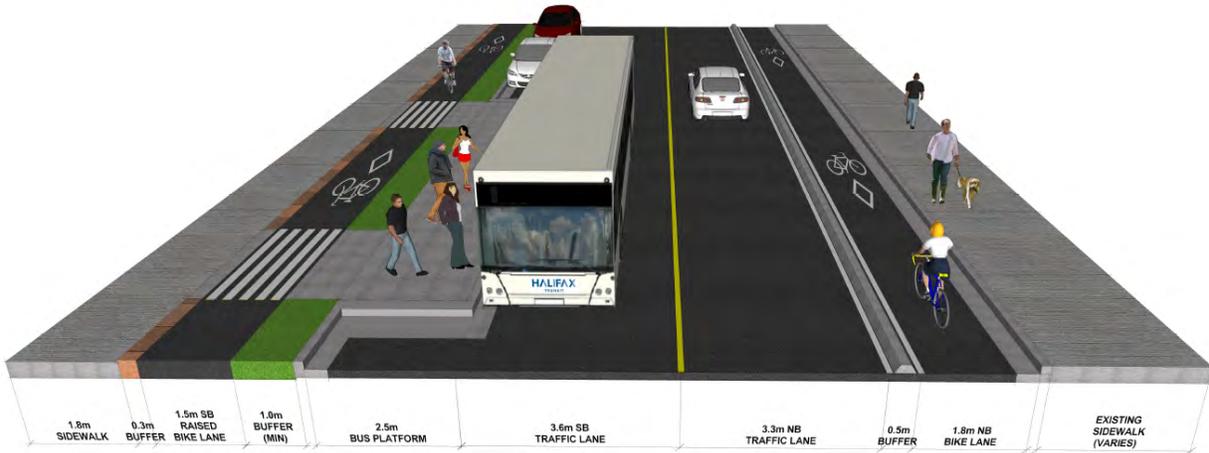


Figure 4-6: Concept Design – Option A (Transit)

OPTION B: RAISED BICYCLE LANE ON WEST SIDE & EAST SIDE

Although implementing a separated on-street bicycle lane on the east side of the street helps to reduce the project cost by allowing the existing sidewalk to remain unaffected, it creates an inconsistent corridor with two different types of cycling treatments. To address this, while continuing to recognize the value of using raised bicycle lanes, Option B was developed and is illustrated in Figures 4-7, 4-8 and 4-9. With this option, a raised bicycle lane is created on both sides of the street. Having both bicycle facilities separated (both vertically and horizontally) increases the level of comfort and provides quality cycling infrastructure along Dutch Village Road. There is added cost to this option compared to Option A, as the existing curb on the east side of the street will need to be removed and rebuilt.



Figure 4-7: Concept Design – Option B (Typical)

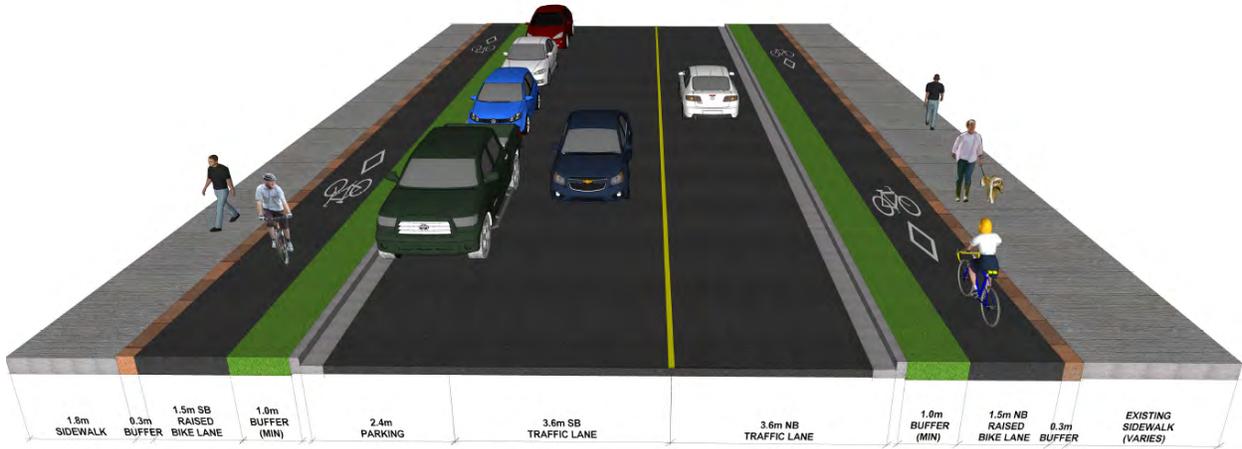


Figure 4-8: Concept Design – Option B (Parking)



Figure 4-9: Concept Design – Option B (Transit)

4.4 CROSSWALK ANALYSIS & WARRANTS

Pedestrian crossing warrants were completed prior to completing the preferred design option for Dutch Village Road. The Transportation Association of Canada (TAC) Pedestrian Crossing Control Guide (2018) was used to evaluate the three existing crosswalks and the proposed crosswalk located near Westerwald Street.

The Transportation Association of Canada (TAC) is a national engineering body that has established warrant criteria based on best practices for marking crosswalks in the Pedestrian Crossing Control Guide, 2018. This guide is used by Canadian jurisdictions to determine whether a site is a candidate for pedestrian crossing control and what the appropriate pedestrian treatment at a road crossing should be. When using the Guide, the crosswalk location under consideration is assessed based on:

- a) Pedestrian volumes
- b) Vehicular volumes
- c) Spacing - how close to the nearest controlled crossing?
- d) Connectivity to existing infrastructure such as sidewalks. Should a marked crosswalk be installed to support pedestrian connectivity?

At the beginning of the project, WSP collected pedestrian and vehicular volume data on Wednesday, May 30, 2018 at the Dutch Village Road intersections with Central, Rosedale, and Rufus / Deal. This data indicates two-way peak hourly traffic volumes of around 1,300 vehicles per hour (vph) on Dutch Village Road and that each of the three marked crosswalks crossing Dutch Village Road were observed to average more than 15 pedestrians per hour. The count summaries are included in Appendix A.

The TAC Pedestrian Crossing Control Guide, 2018 contains a Decision Support Tool that considers the warrant criteria and provides a recommendation on whether a site is a candidate for pedestrian crossing control. The assessment of each of the Pedestrian warrant criteria is summarized in Table 4-3.

Table 4-3: Pedestrian Crossing Warrant Considerations

| Criteria | Warrant Met? | | | |
|----------------------|--|--|---|--|
| | Rufus / Deal | Rosedale | Central | Westerwald |
| a) Pedestrian Volume | ✓ Yes (33 / hr) | ✓ Yes (18 / hr) | ✓ Yes (20 / hr) | Not Available |
| b) Vehicular Volume | ✓ Yes (~1,300 vph) | ✓ Yes (~1,300 vph) | ✓ Yes (~1,300 vph) | ✓ Yes (~1,300 vph) |
| c) Spacing | ✗ No (~100m from signalized crossing at Alma Crescent | ✓ Yes (However, this crossing is only 100m from Central Avenue. Consideration could be given to consolidating the two crossings) | ✓ Yes (However, this crossing is only 100m from Rosedale Avenue. Consideration could be given to consolidating the two crossings) | ✗ No (~100m from signalized crossing at Joseph Howe Drive |
| d) Connectivity | ✓ Yes | ✓ Yes | ✓ Yes | ✓ Yes (Provides added continuity from COLT connection) |

Considering the results of the warrant criteria and to provide network connectivity, the TAC *Pedestrian Crossing Control Guide, 2018* finds that the sites are candidates for pedestrian crossing control.

In addition to providing guidance on whether a location should be considered for pedestrian crossing control, the Guide contains a Decision Support Tool that provides guidance on appropriate level of control for a pedestrian crossing. With a two-lane crossing of Dutch Village Road and an estimated daily average volume of over 12,000 vehicles, the Decision Support Tool recommends that if the marked crosswalks crossing Dutch Village Road at these three locations are maintained they should be considered for a “RRFB” level of control. This type of control is a marked (zebra) crosswalk with side-mounted rectangular rapid flashing beacons and crosswalk signage.

4.5 PREFERRED OPTION

Following review of the two options identified in Section 4.3, HRM staff agreed that **Option B** was preferred. Although this option requires the existing sidewalk on the east side of the street to be modified, it was felt this option resulted in better infrastructure consistency and is more aligned with the objective of creating a ‘AAA’ bicycle facility. Applying this preferred cross-section to the street layout produced the functional plan drawings, shown in Appendix D.

The following features are beneficial to the safety and operation of the street and have been incorporated into the design:

- The driveway to the Shoppers Drug Mart property has been relocated to the north, farther away from the Joseph Howe Drive intersection (see Figure 4-10). This location will result in fewer turning conflicts and better crossing sight distance for vehicles exiting from the driveway. Although this change will necessitate modifications to the parking layout on the site, it is not expected to result in any net loss of parking spaces. The before and after images are shown for comparison and additional information can be found in Appendix B.



Figure 4-10: Shoppers Drug Mart Concept

- A median island has been upgraded at the Sunnybrae Avenue intersection (see Figure 4-10). The key benefit of this treatment is that it physically prevents left turning traffic to and from Sunnybrae Avenue. These movements are currently prohibited by a sign and a smaller median. Another benefit of this island is that it narrows the travel lanes, resulting in slower vehicle travel speeds and creates a “gateway” as vehicles cross from the wide street expanses of Bayers Road and Joseph Howe Drive into the commercial district.
- A horizontal curve at Andrew Street has been “smoothened” by shifting the alignment within the ROW. Adding to the radius of this curve will improve sight distance.
- Improvements are made to access management, particularly on the west side of the street. Currently, vehicles can enter and exit the street at any point, which raises the risk of vehicle conflict and decreases the predictability of vehicle movements. Consolidating the entry and exit points to well-defined driveways reduces conflict locations between vehicles and pedestrians and makes the potential conflicts much safer.
- The proposed buffer areas between the street and the bicycle lane, combined with the ability to extend the curb into the street, creates opportunity for expanded waiting areas at transit stops. In some cases, there may be an opportunity to add a shelter where passenger volumes warrant one.
- Several parking bays have been created where right-of-way space allows it on the west side of the street. These bays can include a mixture of short-duration public parking, accessible parking and loading zones. This determination can be made at a later date by the Municipality in consultation with the local businesses who will rely on this parking. Considering the loss of existing 24 “nose-in” parking spots, the addition of 29 on-street parking spots is expected to result in a small net gain of parking.
- A new marked crosswalk is proposed to be placed at the Sunnybrae intersection to accommodate what is anticipated to be a high desire crossing area from the residential area to the Shoppers Drug Mart and other destinations. The upgraded median island adds to the safety of a pedestrian crossing at this location, by narrowing the travel lanes and providing a refuge area so that pedestrians can cross the two streams of traffic one at a time.
- All of the pedestrian crossings along Dutch Village Road (four in total) are recommended to be enhanced with side-mounted rectangular rapid flashing beacons (RRFB) in addition to side mounted signs.
- With the new sidewalk and curb on the west side of Dutch Village Road, the road will be narrowed and accommodate two lanes of traffic. The existing road had two lanes of traffic with additional asphalt space (due to no curb on the west side) allowing for vehicles to pass a stopped transit vehicle or a vehicle waiting to turn left. With the narrower roadway, vehicles may wait behind stopped buses or other vehicles making a left turn movement and this may increase delay on the corridor. While buses at stops may increase delay to some traffic, this is expected to be minimal given the low bus volumes. Overall, the proposed changes will have a minimal negative impact on traffic flow delay on Dutch Village Road.

- There are 3 utility poles on the east side and 10 utility poles on the west side of Dutch Village Road that will require relocation.

4.5.1 PUBLIC OPEN HOUSE

An open house session was held for members of the public on February 20th, 2019 from 6-8pm in the multi-purpose room at Centennial Arena (27 Vimy Avenue), to review the preferred design option for the Dutch Village Road. Using panel displays, residents and members of the public were shown the design option for the raised bicycle facilities from Joseph Howe Drive to Alma Crescent. Members of the public were asked to provide their feedback and a highlight summary is provided below.



Photo 4-1: Open House – Evening Session

Copies of the public open house boards are included in Appendix B with the public feedback for each board presented in Appendix C.

HIGHLIGHT SUMMARY:

- Additional lighting and trees/shrubs would be an added benefit to Dutch Village Road.
- Favorable of the protected bike lanes and being separated from vehicles.
- Bus shelters at the transit stops would be a nice addition.
- The new sidewalk on the west side is badly needed and the curb bumpouts provides better visibility at crosswalk locations.
- Want to see a better connection to COLT travelling from Dutch Village Road ‘AAA’ bicycle facility.

4.6 COST ESTIMATES FOR PREFERRED OPTION

Class ‘C’ cost estimates have been prepared for the preferred design option provided in Appendix D. The cost estimates do not include possible property acquisition, relocation of utility poles and services or underground infrastructure relocation. Even though HRM does not pay for relocation of utility poles, utility pole relocation is required along Dutch Village Road.

It is estimated that these measures can be implemented for a budget of \$950,000 plus HST. The breakdown per phase is as follows and is further described in Appendix E.

5 SUMMARY & RECOMMENDATIONS

5.1 SUMMARY

The ongoing development of a planning strategy to create growth opportunities and an urban commercial streetscape on Dutch Village Road, makes the street an ideal candidate for application of the Integrated Mobility Plan's Complete Street principles.

The preferred functional plan put forward in this study creates an improved pedestrian realm with sidewalks on both sides of the street and space for street amenities such as benches, waste receptacles, bicycle parking, transit waiting areas and vegetation. An All Ages and Abilities ('AAA') bicycle facility is established by creating raised bicycle lanes, at sidewalk level that includes a tactile buffer between them and the sidewalk. The travel lanes on the street are narrowed and better defined to help control vehicle travel speeds and shorten crossing distances while maintaining full functionality of traffic operations. The plan improves access management to properties by eliminating street conflicts created by "nose-in" parking and replacing that with defined driveways and on-street parallel parking. The proposed bicycle facilities on Dutch Village Road will connect into the existing Chain of Lakes Trail facilities with future opportunities on Westerwald Street to be designated as a Local Street Bikeway.

The preferred functional plan not only addresses the many safety and functional deficiencies of the existing street but creates an environment in which the Dutch Village Road area can thrive and grow.

5.2 RECOMMENDATIONS

Based on the background review, stakeholder and public engagement, as well as conceptual design, the following recommendations have been developed for consideration by the Municipality.

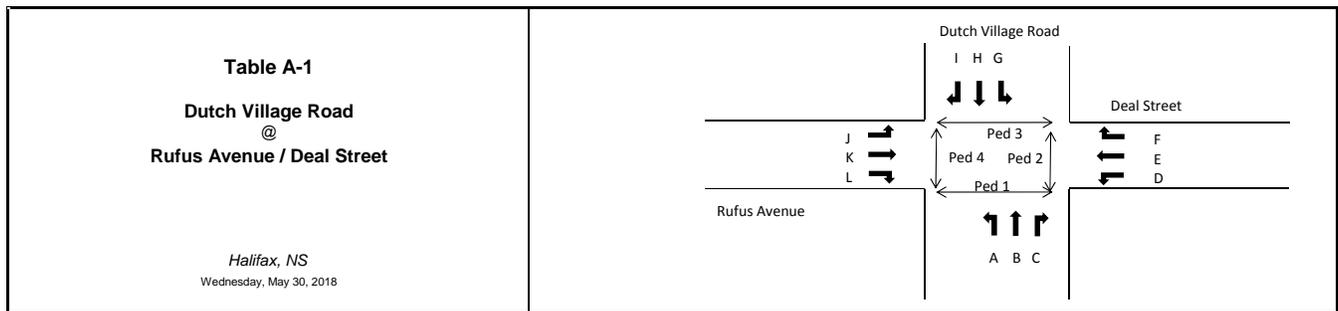
NEXT STEPS

- It is recommended to include the existing intersections of Bayers Road/Joseph Howe Drive and Alma Crescent/Dutch Village Road within the scope of the detailed design. This will assist with the continuity of the bicycle lanes, connecting to the Chain of Lake Trail and completing the necessary improvements at the signalized intersection.
- While initial engagement with abutting property owners was completed during the conceptual design, it is recommended to further engage with property owners, who may be affected by the proposed changes, to modify the design as needed at the 60% detailed design stage.
- Complete the detailed design of Dutch Village Road, acquire any needed property and relocate the necessary utility poles. Other items to consider during detailed design include:
 - Review driveway locations and width to ensure they meet the needs of users.
 - Review width of curb to allow enough space for emergency vehicles.
 - Review any grade constraints/ ROW space for retaining walls.
 - Determine where space is available to include bus shelters.
 - Review potential underground conflicts, such as catchbasin relocations.
 - Review opportunities to include trees and landscape features along corridor where is space is available.
- Construct the project with the proposed sidewalk and the raised bicycle lane on the west side and the raised bicycle lane on the east side of Dutch Village Road.
 - There may be potential to construct in two phases with Phase 1 including the section from Joseph Howe Drive/Bayers Road intersection to Sunnybrae Avenue with the realignment of the Shoppers Drug Mart Driveway and Phase 2 would be the completion of the remainder of the corridor. Phase 2 may also be completed in two stages with completing the sidewalk and raised bicycle lane on the west side of Dutch Village Road with a painted bicycle lane on the east side. Later the raised bicycle lane on the east side could be added. Completing Phase 2 all at once would be ideal as it would only disrupt the community for a construction season.

Appendix A

PEDESTRIAN COUNTS

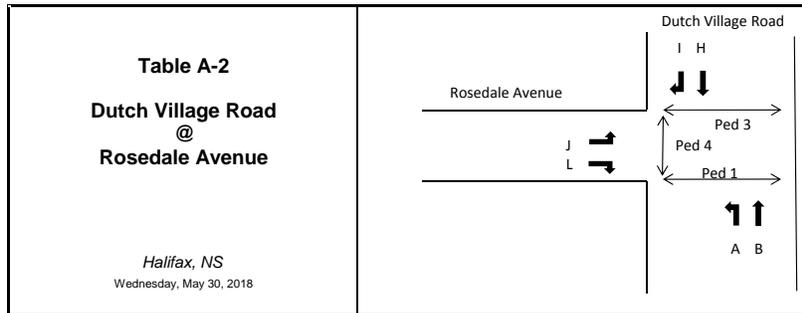




| AM Peak Period Volume Data | | | | | | | | | | | | | | |
|----------------------------|--|------------|-----------|--------------------------------|----------|-----------|--|------------|-----------|---------------------------------|-----------|-----------|-------------------|--|
| Time | Dutch Village Road Northbound Approach | | | Deal Street Westbound Approach | | | Dutch Village Road Southbound Approach | | | Rufus Avenue Eastbound Approach | | | Total Vehicles | |
| | A | B | C | D | E | F | G | H | I | J | K | L | | |
| 07:00-07:15 | 4 | 53 | 0 | 0 | 0 | 0 | 0 | 115 | 6 | 7 | 1 | 9 | 195 | |
| 07:15-07:30 | 1 | 45 | 2 | 2 | 0 | 2 | 2 | 142 | 6 | 9 | 0 | 16 | 227 | |
| 07:30-07:45 | 1 | 34 | 6 | 2 | 0 | 1 | 13 | 196 | 2 | 5 | 0 | 16 | 276 | |
| 07:45-08:00 | 2 | 53 | 8 | 2 | 0 | 1 | 14 | 214 | 4 | 5 | 20 | 23 | 346 | |
| 08:00-08:15 | 4 | 57 | 1 | 1 | 0 | 1 | 13 | 224 | 6 | 5 | 3 | 23 | 338 | |
| 08:15-08:30 | 4 | 66 | 3 | 2 | 0 | 2 | 6 | 190 | 8 | 10 | 0 | 12 | 303 | |
| 08:30-08:45 | 6 | 78 | 0 | 0 | 0 | 3 | 8 | 217 | 9 | 5 | 4 | 13 | 343 | |
| 08:45-09:00 | 3 | 91 | 5 | 0 | 0 | 4 | 7 | 157 | 11 | 6 | 0 | 13 | 297 | |
| AM Peak Hour | 16 | 254 | 12 | 5 | 0 | 7 | 41 | 845 | 27 | 25 | 27 | 71 | 1330 | |
| 07:00-08:00 | 8 | 185 | 16 | 6 | 0 | 4 | 29 | 667 | 18 | 26 | 21 | 64 | 1044 | |
| 08:00-09:00 | 17 | 292 | 9 | 3 | 0 | 10 | 34 | 788 | 34 | 26 | 7 | 61 | 1281 | |
| | Ped 1 | | | Ped 2 | | | Ped 3 | | | Ped 4 | | | Total Peds | |
| 07:00-08:00 | 32 | | | 9 | | | 0 | | | 13 | | | 54 | |
| 08:00-09:00 | 42 | | | 18 | | | 0 | | | 27 | | | 87 | |

| Midday Peak Period Volume Data | | | | | | | | | | | | | | |
|--------------------------------|--|------------|-----------|--------------------------------|----------|----------|--|------------|-----------|---------------------------------|----------|-----------|-------------------|--|
| Time | Dutch Village Road Northbound Approach | | | Deal Street Westbound Approach | | | Dutch Village Road Southbound Approach | | | Rufus Avenue Eastbound Approach | | | Total Vehicles | |
| | A | B | C | D | E | F | G | H | I | J | K | L | | |
| 11:30-11:45 | 7 | 106 | 6 | 1 | 0 | 0 | 5 | 110 | 8 | 3 | 1 | 7 | 254 | |
| 11:45-12:00 | 11 | 119 | 4 | 4 | 0 | 2 | 2 | 92 | 10 | 6 | 1 | 7 | 258 | |
| 12:00-12:15 | 7 | 113 | 6 | 2 | 0 | 3 | 4 | 102 | 10 | 3 | 2 | 6 | 258 | |
| 12:15-12:30 | 9 | 96 | 3 | 1 | 0 | 0 | 0 | 114 | 17 | 6 | 0 | 5 | 251 | |
| 12:30-12:45 | 11 | 99 | 4 | 2 | 0 | 1 | 3 | 102 | 9 | 5 | 1 | 4 | 241 | |
| 12:45-13:00 | 9 | 106 | 4 | 4 | 0 | 1 | 7 | 117 | 6 | 2 | 0 | 10 | 266 | |
| 13:00-13:15 | 4 | 130 | 3 | 0 | 0 | 3 | 1 | 114 | 16 | 6 | 0 | 10 | 287 | |
| 13:15-13:30 | 6 | 111 | 1 | 2 | 0 | 3 | 5 | 105 | 9 | 3 | 1 | 2 | 248 | |
| Midday Peak Hour | 33 | 431 | 14 | 7 | 0 | 5 | 11 | 447 | 48 | 19 | 1 | 29 | 1045 | |
| 11:30-12:30 | 34 | 434 | 19 | 8 | 0 | 5 | 11 | 418 | 45 | 18 | 4 | 25 | 1021 | |
| 12:30-13:30 | 30 | 446 | 12 | 8 | 0 | 8 | 16 | 438 | 40 | 16 | 2 | 26 | 1042 | |
| | Ped 1 | | | Ped 2 | | | Ped 3 | | | Ped 4 | | | Total Peds | |
| 11:30-12:30 | 23 | | | 25 | | | 0 | | | 24 | | | 72 | |
| 12:30-13:30 | 34 | | | 23 | | | 0 | | | 20 | | | 77 | |

| PM Peak Period Volume Data | | | | | | | | | | | | | | |
|----------------------------|--|------------|-----------|--------------------------------|----------|-----------|--|------------|-----------|---------------------------------|----------|-----------|-------------------|--|
| Time | Dutch Village Road Northbound Approach | | | Deal Street Westbound Approach | | | Dutch Village Road Southbound Approach | | | Rufus Avenue Eastbound Approach | | | Total Vehicles | |
| | A | B | C | D | E | F | G | H | I | J | K | L | | |
| 16:00-16:15 | 13 | 139 | 5 | 4 | 1 | 4 | 1 | 109 | 17 | 3 | 1 | 6 | 303 | |
| 16:15-16:30 | 9 | 142 | 6 | 3 | 0 | 6 | 2 | 120 | 14 | 1 | 0 | 3 | 306 | |
| 16:30-16:45 | 8 | 142 | 4 | 6 | 0 | 3 | 3 | 132 | 12 | 4 | 1 | 6 | 321 | |
| 16:45-17:00 | 11 | 152 | 1 | 7 | 0 | 5 | 4 | 119 | 8 | 2 | 0 | 1 | 310 | |
| 17:00-17:15 | 12 | 159 | 9 | 6 | 1 | 3 | 6 | 117 | 10 | 1 | 0 | 10 | 334 | |
| 17:15-17:30 | 18 | 141 | 4 | 4 | 0 | 2 | 6 | 143 | 17 | 2 | 0 | 9 | 346 | |
| 17:30-17:45 | 12 | 145 | 0 | 4 | 2 | 4 | 2 | 114 | 14 | 2 | 0 | 11 | 310 | |
| 17:45-18:00 | 14 | 122 | 1 | 1 | 0 | 2 | 5 | 115 | 14 | 3 | 2 | 6 | 285 | |
| PM Peak Hour | 49 | 594 | 18 | 23 | 1 | 13 | 19 | 511 | 47 | 9 | 1 | 26 | 1311 | |
| 16:00-17:00 | 41 | 575 | 16 | 20 | 1 | 18 | 10 | 480 | 51 | 10 | 2 | 16 | 1240 | |
| 17:00-18:00 | 56 | 567 | 14 | 15 | 3 | 11 | 19 | 489 | 55 | 8 | 2 | 36 | 1275 | |
| | Ped 1 | | | Ped 2 | | | Ped 3 | | | Ped 4 | | | Total Peds | |
| 16:00-17:00 | 32 | | | 36 | | | 0 | | | 19 | | | 87 | |
| 17:00-18:00 | 33 | | | 39 | | | 0 | | | 16 | | | 88 | |



| AM Peak Period Volume Data | | | | | | | | |
|----------------------------|--------------|--|------------|--|-----------|------------------------------------|------------|----------------|
| Time | | Dutch Village Road Northbound Approach | | Dutch Village Road Southbound Approach | | Rosedale Avenue Eastbound Approach | | Total Vehicles |
| | | A | B | H | I | J | L | |
| 07:00 | 07:15 | 0 | 59 | 129 | 5 | 6 | 18 | 217 |
| 07:15 | 07:30 | 4 | 45 | 154 | 2 | 7 | 23 | 235 |
| 07:30 | 07:45 | 2 | 36 | 212 | 5 | 5 | 33 | 293 |
| 07:45 | 08:00 | 4 | 59 | 225 | 4 | 5 | 35 | 332 |
| 08:00 | 08:15 | 4 | 58 | 252 | 3 | 5 | 35 | 357 |
| 08:15 | 08:30 | 4 | 60 | 215 | 4 | 9 | 30 | 322 |
| 08:30 | 08:45 | 10 | 81 | 231 | 9 | 8 | 31 | 370 |
| 08:45 | 09:00 | 4 | 92 | 181 | 6 | 10 | 26 | 319 |
| AM Peak Hour | | 22 | 258 | 923 | 20 | 27 | 131 | 1381 |
| 07:00 | 08:00 | 10 | 199 | 720 | 16 | 23 | 109 | 1077 |
| 08:00 | 09:00 | 22 | 291 | 879 | 22 | 32 | 122 | 1368 |
| | | Ped 1 | | Ped 3 | | Ped 4 | | Total Peds |
| 07:00 | 08:00 | 0 | | 7 | | 9 | | 16 |
| 08:00 | 09:00 | 0 | | 18 | | 12 | | 30 |

| Midday Peak Period Volume Data | | | | | | | | |
|--------------------------------|--------------|--|------------|--|-----------|------------------------------------|-----------|----------------|
| Time | | Dutch Village Road Northbound Approach | | Dutch Village Road Southbound Approach | | Rosedale Avenue Eastbound Approach | | Total Vehicles |
| | | A | B | H | I | J | L | |
| 11:30 | 11:45 | 7 | 127 | 108 | 14 | 9 | 11 | 276 |
| 11:45 | 12:00 | 16 | 128 | 97 | 5 | 9 | 12 | 267 |
| 12:00 | 12:15 | 10 | 108 | 112 | 4 | 5 | 13 | 252 |
| 12:15 | 12:30 | 12 | 124 | 115 | 7 | 6 | 12 | 276 |
| 12:30 | 12:45 | 11 | 107 | 103 | 6 | 7 | 15 | 249 |
| 12:45 | 13:00 | 7 | 112 | 127 | 12 | 12 | 18 | 288 |
| 13:00 | 13:15 | 5 | 127 | 124 | 6 | 10 | 6 | 278 |
| 13:15 | 13:30 | 6 | 122 | 119 | 7 | 8 | 12 | 274 |
| Midday Peak Hour | | 35 | 470 | 469 | 31 | 35 | 51 | 1091 |
| 11:30 | 12:30 | 45 | 487 | 432 | 30 | 29 | 48 | 1071 |
| 12:30 | 13:30 | 29 | 468 | 473 | 31 | 37 | 51 | 1089 |
| | | Ped 1 | | Ped 3 | | Ped 4 | | Total Peds |
| 11:30 | 12:30 | 0 | | 14 | | 24 | | 38 |
| 12:30 | 13:30 | 0 | | 18 | | 32 | | 50 |

| PM Peak Period Volume Data | | | | | | | | |
|----------------------------|--------------|--|------------|--|-----------|------------------------------------|-----------|----------------|
| Time | | Dutch Village Road Northbound Approach | | Dutch Village Road Southbound Approach | | Rosedale Avenue Eastbound Approach | | Total Vehicles |
| | | A | B | H | I | J | L | |
| 16:00 | 16:15 | 15 | 144 | 127 | 9 | 11 | 8 | 314 |
| 16:15 | 16:30 | 16 | 164 | 123 | 3 | 3 | 11 | 320 |
| 16:30 | 16:45 | 24 | 167 | 130 | 6 | 8 | 8 | 343 |
| 16:45 | 17:00 | 18 | 160 | 117 | 9 | 7 | 6 | 317 |
| 17:00 | 17:15 | 19 | 174 | 147 | 4 | 5 | 5 | 354 |
| 17:15 | 17:30 | 22 | 175 | 141 | 12 | 6 | 7 | 363 |
| 17:30 | 17:45 | 16 | 172 | 117 | 7 | 5 | 11 | 328 |
| 17:45 | 18:00 | 17 | 137 | 111 | 10 | 5 | 11 | 291 |
| PM Peak Hour | | 83 | 676 | 535 | 31 | 26 | 26 | 1377 |
| 16:00 | 17:00 | 73 | 635 | 497 | 27 | 29 | 33 | 1294 |
| 17:00 | 18:00 | 74 | 658 | 516 | 33 | 21 | 34 | 1336 |
| | | Ped 1 | | Ped 3 | | Ped 4 | | Total Peds |
| 16:00 | 17:00 | 0 | | 14 | | 25 | | 39 |
| 17:00 | 18:00 | 0 | | 38 | | 17 | | 55 |

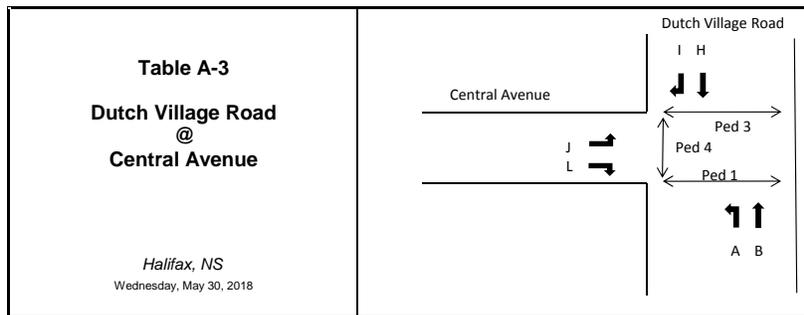


Table A-3
Dutch Village Road
@
Central Avenue

Halifax, NS
Wednesday, May 30, 2018

AM Peak Period Volume Data

| Time | Dutch Village Road Northbound Approach | | Dutch Village Road Southbound Approach | | Central Avenue Eastbound Approach | | Total Vehicles |
|----------------------|--|------------|--|-----------|-----------------------------------|------------|-------------------|
| | A | B | H | I | J | L | |
| 07:00 - 07:15 | 3 | 29 | 139 | 0 | 5 | 22 | 198 |
| 07:15 - 07:30 | 2 | 43 | 168 | 3 | 4 | 23 | 243 |
| 07:30 - 07:45 | 4 | 32 | 238 | 1 | 1 | 32 | 308 |
| 07:45 - 08:00 | 2 | 54 | 256 | 2 | 7 | 32 | 353 |
| 08:00 - 08:15 | 11 | 52 | 269 | 7 | 3 | 39 | 381 |
| 08:15 - 08:30 | 11 | 58 | 243 | 6 | 3 | 23 | 344 |
| 08:30 - 08:45 | 3 | 70 | 259 | 9 | 9 | 26 | 376 |
| 08:45 - 09:00 | 10 | 83 | 201 | 3 | 7 | 12 | 316 |
| AM Peak Hour | 27 | 234 | 1027 | 24 | 22 | 120 | 1454 |
| 07:00 - 08:00 | 11 | 158 | 801 | 6 | 17 | 109 | 1102 |
| 08:00 - 09:00 | 35 | 263 | 972 | 25 | 22 | 100 | 1417 |
| | Ped 1 | | Ped 3 | | Ped 4 | | Total Peds |
| 07:00 - 08:00 | 0 | | 9 | | 9 | | 18 |
| 08:00 - 09:00 | 0 | | 28 | | 13 | | 41 |

Midday Peak Period Volume Data

| Time | Dutch Village Road Northbound Approach | | Dutch Village Road Southbound Approach | | Central Avenue Eastbound Approach | | Total Vehicles |
|-------------------------|--|------------|--|-----------|-----------------------------------|-----------|-------------------|
| | A | B | H | I | J | L | |
| 11:30 - 11:45 | 11 | 123 | 108 | 12 | 5 | 8 | 267 |
| 11:45 - 12:00 | 19 | 136 | 99 | 9 | 8 | 11 | 282 |
| 12:00 - 12:15 | 7 | 101 | 127 | 3 | 4 | 10 | 252 |
| 12:15 - 12:30 | 12 | 127 | 119 | 4 | 5 | 7 | 274 |
| 12:30 - 12:45 | 8 | 114 | 116 | 5 | 3 | 9 | 255 |
| 12:45 - 13:00 | 8 | 102 | 137 | 5 | 3 | 10 | 265 |
| 13:00 - 13:15 | 11 | 130 | 135 | 3 | 5 | 12 | 296 |
| 13:15 - 13:30 | 9 | 122 | 125 | 3 | 4 | 9 | 272 |
| Midday Peak Hour | 39 | 473 | 507 | 17 | 16 | 38 | 1090 |
| 11:30 - 12:30 | 49 | 487 | 453 | 28 | 22 | 36 | 1075 |
| 12:30 - 13:30 | 36 | 468 | 513 | 16 | 15 | 40 | 1088 |
| | Ped 1 | | Ped 3 | | Ped 4 | | Total Peds |
| 11:30 - 12:30 | 0 | | 19 | | 15 | | 34 |
| 12:30 - 13:30 | 1 | | 12 | | 16 | | 29 |

PM Peak Period Volume Data

| Time | Dutch Village Road Northbound Approach | | Dutch Village Road Southbound Approach | | Central Avenue Eastbound Approach | | Total Vehicles |
|----------------------|--|------------|--|-----------|-----------------------------------|-----------|-------------------|
| | A | B | H | I | J | L | |
| 16:00 - 16:15 | 35 | 166 | 127 | 4 | 4 | 12 | 348 |
| 16:15 - 16:30 | 35 | 162 | 119 | 10 | 4 | 9 | 339 |
| 16:30 - 16:45 | 29 | 178 | 141 | 6 | 3 | 13 | 370 |
| 16:45 - 17:00 | 32 | 178 | 123 | 4 | 0 | 10 | 347 |
| 17:00 - 17:15 | 36 | 174 | 141 | 12 | 3 | 9 | 375 |
| 17:15 - 17:30 | 41 | 161 | 130 | 12 | 1 | 7 | 352 |
| 17:30 - 17:45 | 29 | 167 | 115 | 8 | 4 | 10 | 333 |
| 17:45 - 18:00 | 29 | 143 | 118 | 6 | 2 | 14 | 312 |
| PM Peak Hour | 138 | 691 | 535 | 34 | 7 | 39 | 1444 |
| 16:00 - 17:00 | 131 | 684 | 510 | 24 | 11 | 44 | 1404 |
| 17:00 - 18:00 | 135 | 645 | 504 | 38 | 10 | 40 | 1372 |
| | Ped 1 | | Ped 3 | | Ped 4 | | Total Peds |
| 16:00 - 17:00 | 0 | | 25 | | 17 | | 42 |
| 17:00 - 18:00 | 0 | | 29 | | 7 | | 36 |

Appendix B

OPEN HOUSE BOARDS



DUTCH VILLAGE ROAD COMPLETE STREET PREFERRED DESIGN

What is the Dutch Village Road Complete Street Project?

- The draft functional plan for Dutch Village Road creates a consistent vision for the road's look and function. It includes the installation of bicycle lanes, a west-side sidewalk, transit upgrades, and general pedestrian-experience improvements.
- The recommended design complements the **Integrated Mobility Plan's (IMP)** overarching objectives and principles.
- This is a 'Complete Streets' project, aiming to add missing pedestrian and bicycle infrastructure, and integrate these changes with improvements to bus stops and a Halifax Water project.
- The project extends from along both sides of Dutch Village Road from Alma Crescent to Joseph Howe Drive (700m approximately).

Background

- The municipality has been working to implement the various Active Transportation (AT) facility projects identified in the 2014-19 Active Transportation Priorities Plan which identifies candidate routes and facility types across the entire region. Together, these AT facility projects will create a safe, convenient, and connected network for cyclists to travel to and from common origins and destinations in the municipality.
- The IMP identifies the need for AT facility connections on many residential streets, and identifies Dutch Village Road as a Priority Sidewalk Connection to be realized by 2020. The **Integrated Mobility Plan (IMP)** sets a goal to deliver an all ages and abilities ('AAA') bicycling network in the Regional Centre by 2022.
- Curbs and sidewalks were replaced on the east side of Dutch Village Road in 1979, but none have been constructed on the west side between Sunnybrae Avenue and Alma Crescent.
- Fifty-six collisions have been documented over the last three years. There is a need to balance parking needs with access control and pedestrian safety. West side access is uncontrolled, and most of the "off-street" parking that is perpendicular to the travel way encroaches into the public right-of-way and requires motorists to back out into traffic along this very busy street.



What's next for the Dutch Village Road Complete Streets project?

A **functional design report** is nearing completion for the road which will identify the opportunities and constraints for the Design Options. This will include conceptual options for the road as well as a summary of what we heard from public engagement events. Feedback will be used to inform the functional design used to advance towards a detailed design.

We are here

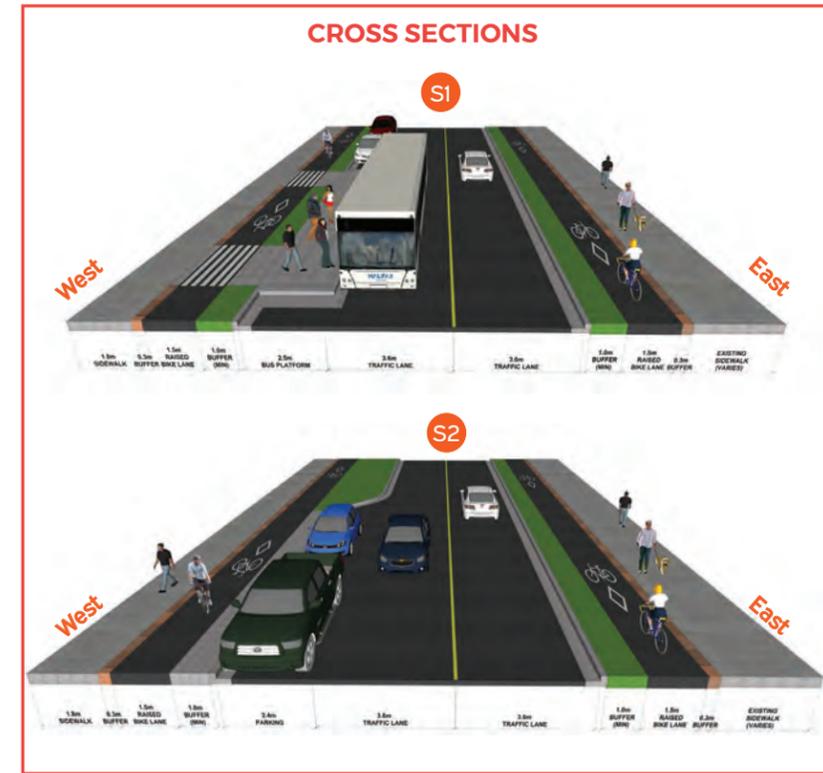
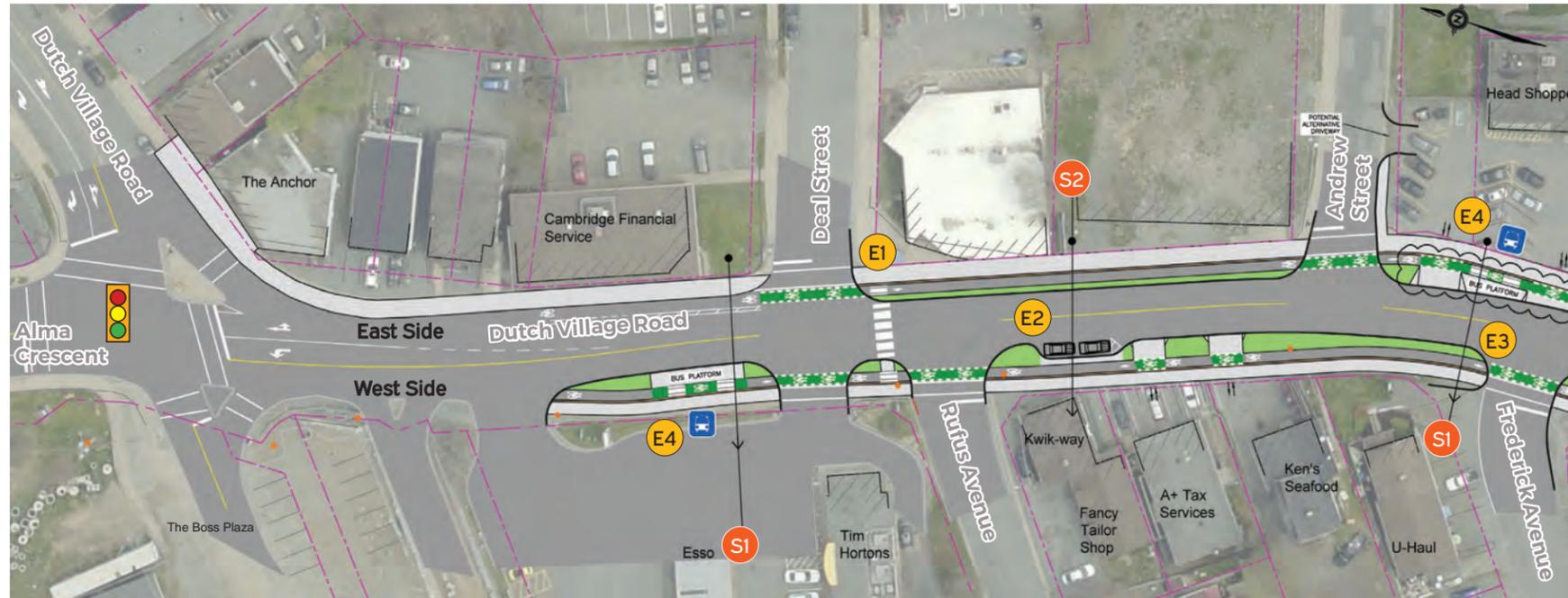
Project Steps

1. Public engagement and draft design options.
2. Finalize functional design reports.
3. Bring preferred option to Council for functional plan approval (2019).
4. Complete detailed design of selected option (2019).
5. Determine construction schedule constraints related to utility relocation and land acquisition.
6. Position selected option for Council budget approval for phased construction subject to scheduling and acquisition constraints.

DUTCH VILLAGE ROAD COMPLETE STREET - PREFERRED OPTION

SEGMENT: ALMA CRESCENT TO FREDERICK AVENUE

Preferred Design: Alma Crescent to Frederick Avenue



Example Images



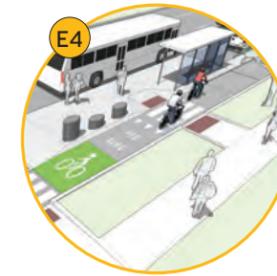
Improved Crosswalk



On Street Parking



Bike Lane



Transit Stop

Existing Conditions Image



LEGEND

- Bus Stop
- Bike Lane
- Property Line
- Accessible Parking
- Signalized Intersection
- Utility Pole

Existing Conditions



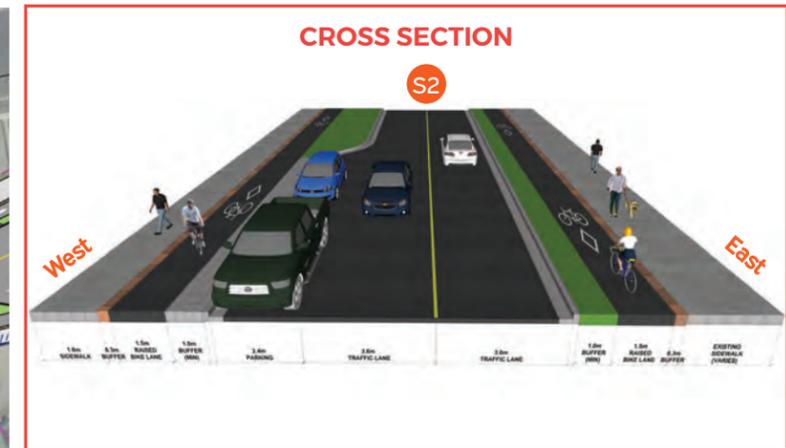
STREET USER IMPACTS

- Development of two one-way 'AAA' protected bike lanes along Dutch Village Road from Deal Street to Frederick Avenue, with a connection to the Chain of Lakes Trail (COLT).
- The west side of Dutch Village Road will have a separated concrete sidewalk. A reduction in direct access parking stalls increases your sense of safety while walking.
- The bus stop on the west side of Dutch Village Road will have a raised platform, making it an accessible stop.
- The intersection of Dutch Village Road and Alma Crescent continues to operate with acceptable levels of delay.
- Existing parking on the west side of Dutch Village Road within the right-of-way will be removed and 29 on-street parking stalls will be added for the entire project.

DUTCH VILLAGE ROAD COMPLETE STREET - PREFERRED OPTION

SEGMENT: FREDERICK AVENUE TO CENTRAL AVENUE

Preferred Design: Frederick Avenue to Central Avenue



LEGEND

- Bus Stop
- Bike Lane
- Property Line
- Accessible Parking
- Signalized Intersection
- Utility Pole

E1
Improved Crosswalk

E2
On Street Parking

E3
Bike Lane

E4
Transit Stop

Existing Conditions Images



STREET USER IMPACTS

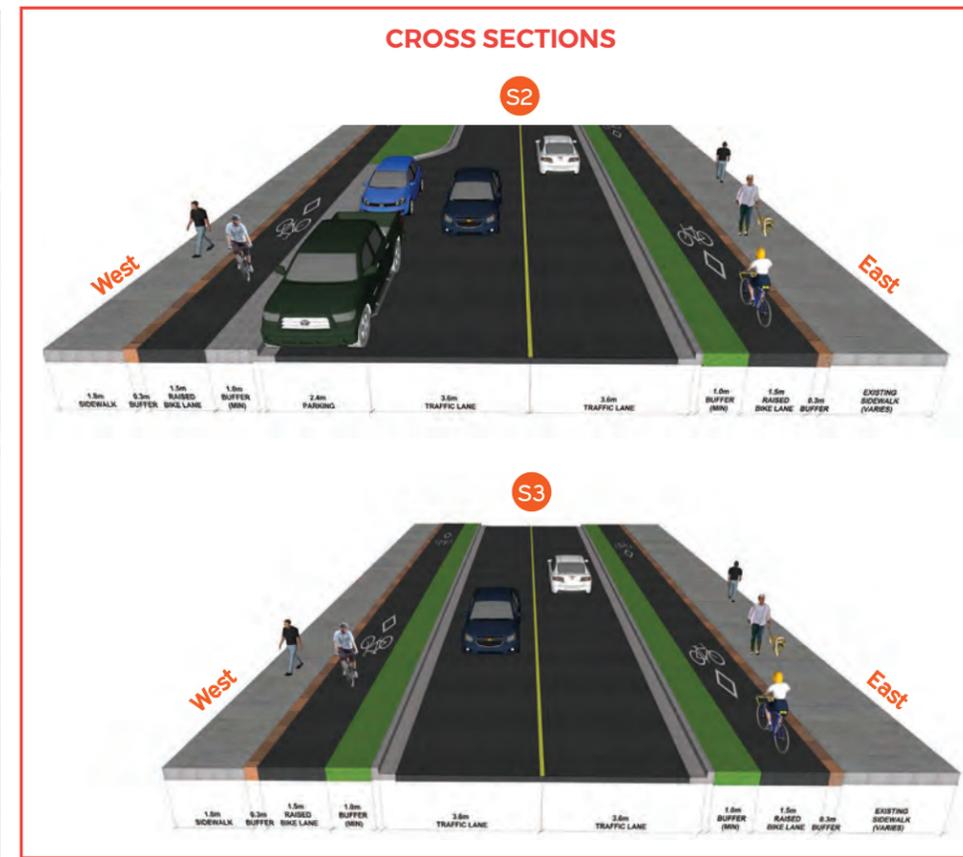
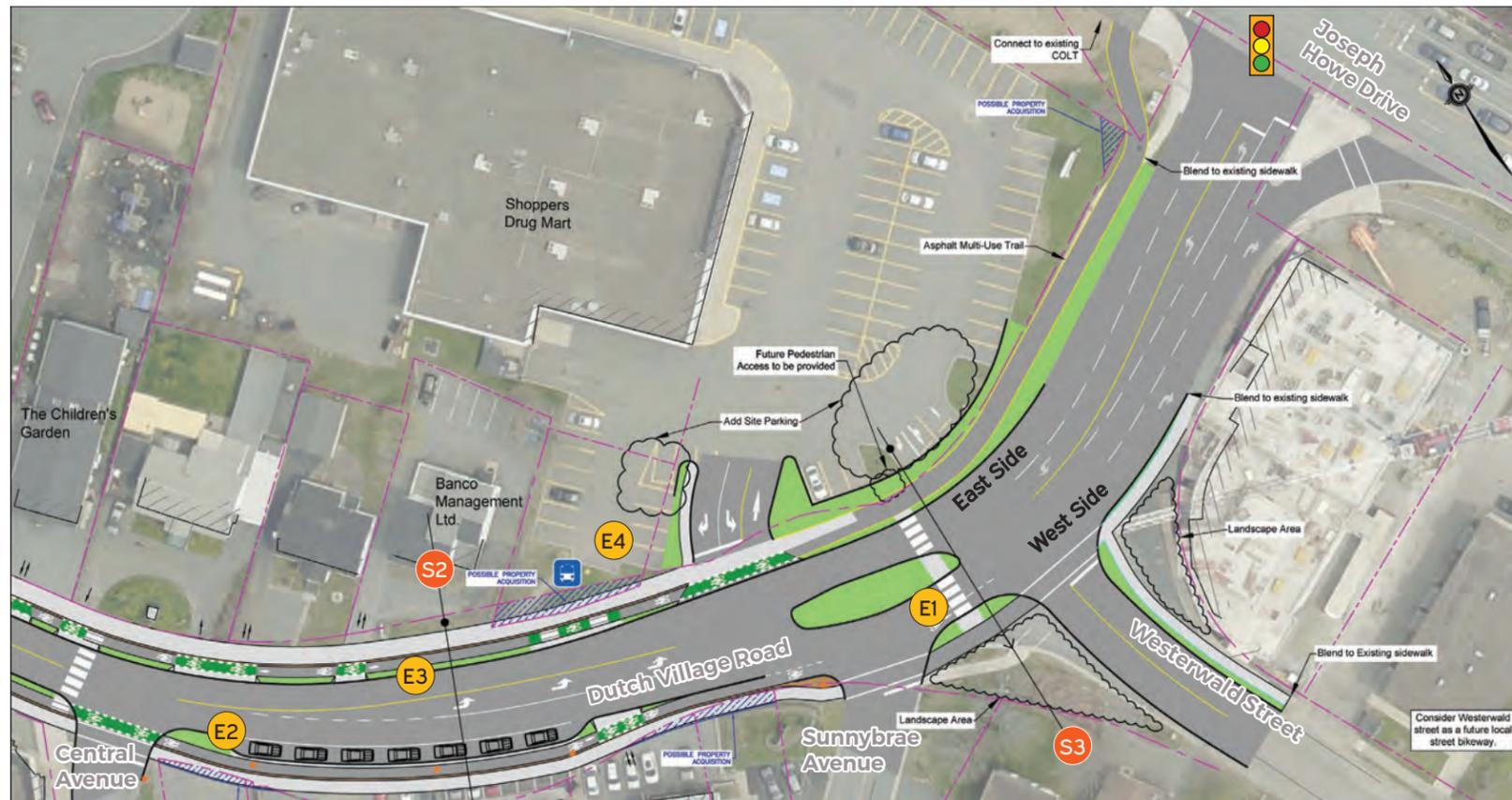
- Development of two one-way 'AAA' protected bike lanes along Dutch Village Road from Frederick Avenue to Central Avenue, with a connection to the Chain of Lakes Trail (COLT).
- The west side of Dutch Village Road will have a separated concrete sidewalk. A reduction in direct access parking stalls increases your sense of safety while walking.
- Relocation of transit stop.
- Traffic flow does not change.
- Existing parking on the west side of Dutch Village Road within the right-of-way will be removed and 29 on-street parking stalls will be added for the entire project.



DUTCH VILLAGE ROAD COMPLETE STREET - PREFERRED OPTION

SEGMENT: CENTRAL AVENUE TO JOSEPH HOWE DRIVE

Preferred Design: Central Avenue to Joseph Howe Drive



LEGEND

-  Bus Stop
-  Bike Lane
-  Property Line
-  Accessible Parking
-  Signalized Intersection
-  Utility Pole

STREET USER IMPACTS

 Development of two one-way 'AAA' protected bike lanes along Dutch Village Road from Central Avenue to a connection to the Chain of Lakes Trail (COLT).

 The west side of Dutch Village Road will have a separated concrete sidewalk. A reduction in direct access parking stalls increases your sense of safety while walking. New crosswalk placed near Westerwald Street.

 Reduction of a lane on Dutch Village Road towards Joseph Howe Drive. A left-turn lane is provided at the new access to Shoppers Drug Mart.

 Existing parking on the west side of Dutch Village Road within the right-of-way will be removed and 29 on-street parking stalls will be added for the entire project.

DUTCH VILLAGE ROAD COMPLETE STREET - PREFERRED OPTION

COMMENT BOARD

Comments about the Alma Crescent to Frederick Avenue segment

Comments about the Frederick Avenue to Central Avenue segment

Comments about the Central Avenue to Joseph Howe Drive segment

General Comments

Appendix C

PUBLIC FEEDBACK





DUTCH VILLAGE ROAD COMPLETE STREET – PREFERRED DESIGN

Public Open House, Wednesday, February 20th, 2019

COMMENT BOARD

Alma Crescent to Frederick Avenue Segment

| Likes | Concerns |
|---|---|
| <ul style="list-style-type: none">None. | <ul style="list-style-type: none">Ken’s Seafood. I am an owner at 3560 Dutch Village. I pay property tax on commercial land. The entrance to the property only accommodates the residential and not the commercial. As of now we have parking for seven cars; with the proposed plan we will be cut back to two. I would at least like three spots.Zipper merge at Bedford HighwayGet rid of billboards.Thru right and thru left at the Boss Plaza intersection. |

Frederick Avenue to Central Avenue Segment

| Likes | Concerns |
|---|---|
| <ul style="list-style-type: none">None. | <ul style="list-style-type: none">Crosswalk at FrederickEast side has too many entrances for businesses – not safe. Option to see if having only one entrance / exit will actually allow for more business parking (DQ, Giant Tiger).Add in ground electrical poles and lightingFairview United Church?Realign Rosedale |

Central Avenue to Joseph Howe Drive Segment

| Likes | Concerns |
|--|--|
| <ul style="list-style-type: none">Like all the changes, especially near Shoppers / Westerwald and Sunnybrae. Seems to solve a lot of concerns. | <ul style="list-style-type: none">Right now although not “designated” in the morning commute there are 2 lanes of traffic from Frederick to Joe Howe. This will reduce that to 1 and increase morning traffic.Move crosswalk (at Joe Howe and Dutch Village intersection) so there is a line of sight between drivers making an right turn onto Joe Howe and pedestrians.Put protective bollards along sidewalk (in front of plaza at Westerwald / Dutch Village / Joe Howe)Add bike ramp (at bus stop on Dutch Village Road) |



General Feedback:

- Street is very dark. Lighting?
- Negative impact on local businesses who lose parking spots. Is this being considered?
- Seem to be some “variables” based on future land acquisitions. What happens if they all don’t come through?
- I like most of what I see. Bike lanes (protected) are a big plus. Crosswalk is needed at Frederick Ave., crossing Dutch Village Road.
- Be great if you could sign up for updates and future meetings. Even our councillor didn’t include it in his newsletter. I only found at via twitter.
- Lots of trees! Nice lighting!
- More trees and traffic calming near crosswalks would be nice.
- Bus shelter on West and East side of D.V.R. near Giant Tiger and near Shoppers Drug Mart.
- More trees. Make “Downtown Fairview” a destination for families. Add nice street lighting. Think Hydrostone type estectics. Plenty of restaurants.
- Overall this seems like a good progressive design. As a pedestrian and cyclist, I would love to see this become reality in the coming years.
- The bike lanes separated from car traffic are an excellent idea!
- This is a main traffic artery. Curious how narrowing lanes with raised curbs will affect traffic flow? What about emergency vehicles needing to get through during peak times?

Online Survey Questions:

1) What do you like about the proposed functional plan for Dutch Village Road between Alma Crescent and Bayer's Road?

- The protected bike lane and west side sidewalk.
- The focus on active transportation and transit priority is excellent!
- Pedestrian island is very good progress, also sidewalk and cycle lanes. Bump outs at crosswalk locations are really needed on this road due to fast moving traffic, so this is very welcome.
- Everything! I think it makes the area more walkable and easier to access for all. I really like the pedestrian improvements around Shoppers Drug Mart (which is awful to navigate with my son's stroller) as well as the sidewalks on both sides of Dutch Village.
- I like the changes to the parking at the businesses. Changing the shoppers entrance isn't bad. And adding the median to eliminate people going up Sunnybrae Dr.
- It is fantastic! Improved sidewalks and a new bike lane is so badly needed here. It's an unsafe area that is rapidly growing and I'm looking forward to seeing the positive changes, thank you!
- Improved sidewalk infrastructure.
- Having a side walk and some parking to use the services on the street would be great. I think this is a great improvement for the Fairview area, that I would like to see for the rest of the Fairview as well.
- 1. Like proposed median to block illegal turn onto Sunnybrae; 2. Like proposed sidewalks and crosswalks on Dutch Village Rd.
- I like that it will create an organized, rejuvenated road that will provide safety to an area that has a lot of pedestrians.
- I am quite pleased with the plan. Provides a much-needed facelift for the area and will make the neighbourhood more pleasant and feel more like a neighbourhood. I hope it can be implemented!
- The look and feel of the proposed plan to make it more aesthetically and pedestrian friendly. Hopefully a narrower roadway will slow cars down as cars travel excessively fast in this area. Removing some parking, parking lot entrances/exits to help alleviate congestion is also a good move.
- It becomes a walkable community.
- Yes!
- The increased pedestrian and bicycle usage is a tremendous improvement. The absence of sidewalks on the west side of Dutch Village Road is a big problem which this plan addresses. New protected bike lanes are the way to go. This plan would improve the whole area.
- Sidewalks and bus stops are definitely welcomed addition and sorting out the free for all parking situation.
- I like the pedestrian improvements and the bike lanes added to the street. I also like the bump out crosswalks that help separate parking areas. And the bump out bus stops are another plus since it removes the problem of leaving and entering traffic (which is what I hope the municipality does for all of Spring Garden instead of just half). I know many people have concerns about the parking, but the plan organizes the spots and removes the problem of perpendicular parking.

- I think any upgrade would be splendid.
- I would like to see pull over lanes for public transit rather than a bus stop blocking a lane of traffic
 - Bicycle lanes and green space are very important. I'm not sure of the importance of having on street parking, especially across from the Dairy Queen and Giant Tiger when there is ample parking in both locations.
 - The vacant lot on the corner of Dutch Village and Rosedale is a contaminated property due to the previous location of a gas station. This is a very small lot and would be very expensive to clean up. Therefore, it may be a good idea to make this a public space.
 - Many people may not know this, but the great country music star Hank Snow married Minni Aalders who is from Fairview. Hank was from Shelburne and spent a lot of time in Fairview walking these streets as he made his way to see in CHNS radio to perform live. Hank went on to become a world-class performer in Nashville, performing regularly at the Grand Ole Opry and is inducted into Country Music Hall of Fame.
 - Perhaps, the potential green space mentioned above could be an ideal location for a bronze statue in recognition of his great talent.

2) Do you have any questions, comments or concerns about the proposed functional plan?

- The lack of east/north-bound AAA cycling infrastructure connection near Joseph Howe is disappointing. The quality of the cycling infrastructure goes from AAA level to sharing the road with 3 lanes of traffic. The priority is again given to traffic capacity instead of cyclist safety.
- There is no infrastructure for cyclists at the intersection of Joseph Howe and DRV, where cyclists are most vulnerable to traffic incidents - this is needed. Measures such as advance boxes and cycle lanes through the intersections should be considered to allow connectivity, as well as a cycle lane along Titus and Lacewood and to connect with the multi purpose route on Joseph Howe.
 - The turning lane from DVR onto Jo Howe is surplus to requirements and makes the road unnecessarily wide. Why not remove this and turn this land into a community feature - some trees perhaps?
 - I would also welcome more points to cross the road by using pedestrian islands, as the crosswalks are far apart. Ped. islands can be used instead of crosswalks to cross a road safely. Many pedestrians do cross the road at key points such as by Giant Tiger - desire lines should be allowed for in the design plans.
 - I am not sure why we need on street parking in addition to the existing car parking lot. There is adequate space already and the parking is at a location where pedestrians often cross the road. The cars will restrict their view and that of drivers.
- I feel that Dutch Village and surrounding area could be the "new north end" and having green spaces and some seating like benches would make it more of a destination. Somewhere you can park your car or bike, walk to or jump of the bus and access services and spend some time in the area will be good for all! I feel sad for the businesses in the area because even though I live less 5 minutes walking distance from most of these businesses I avoid the area because of the lack of walkability. I think these changes will increase the number of businesses in the area and will be so good for the neighbourhood.
- I do not like the elimination of the turn lane on Westerwald. It is painful now let alone when someone will be there turning left. That will totally slow down getting out. The left turn lane allows people to merge into the roadway. This will slow it down so we never get out!
- Disappointed to see the intersection with Alma Crescent is not included. Can a solution be found to connect the west side bike lane to the Chain of Lakes trail on the southwest side of the intersection with Joseph Howe as well?
- Stop talking start doing... the area is an eye sore.
- Does the bike lane on DVR (along Shoppers Drug Mart) connect all the way to Joe Howe? It looks like it stops right after the driveway for Shoppers, it would be great if it connected to Joe Howe and the major bike route there.
- I'm concerned about local businesses reactions to the reduction of parking on the west side of the street.
 - Currently many people use Dutch Village as a two-lane road going towards Halifax, since the right turn towards the highway is usually slower during the morning. I think this should be taken into consideration, since reducing the size of the road would cause a lot more traffic in the area.
- 1. Strongly oppose bike lane on Dutch Village. Any bike traffic would travel on Joe Howe. Have the project team assessed bike lane needs on the street? With new housing developments in the area traffic will greatly - and has already- increased. We need better road space for vehicles not the very sparse bike traffic.
 - 2. Sunnybrae needs a sidewalk. There's a school on the street!
- I don't believe the planners spent enough time considering the traffic flows on Dutch Village. It is very hard to turn left on to Dutch Village from all connecting streets because there are rarely breaks in traffic. This is due to lack of stop signs etc. I am also concerned that buses will not be able to safely make a right turn from Rosedale on to Dutch Village with the reduced lane sizes. Ultimately, it would be great to see less traffic on Dutch Village but that would mean a better plan for Windsor street exchange



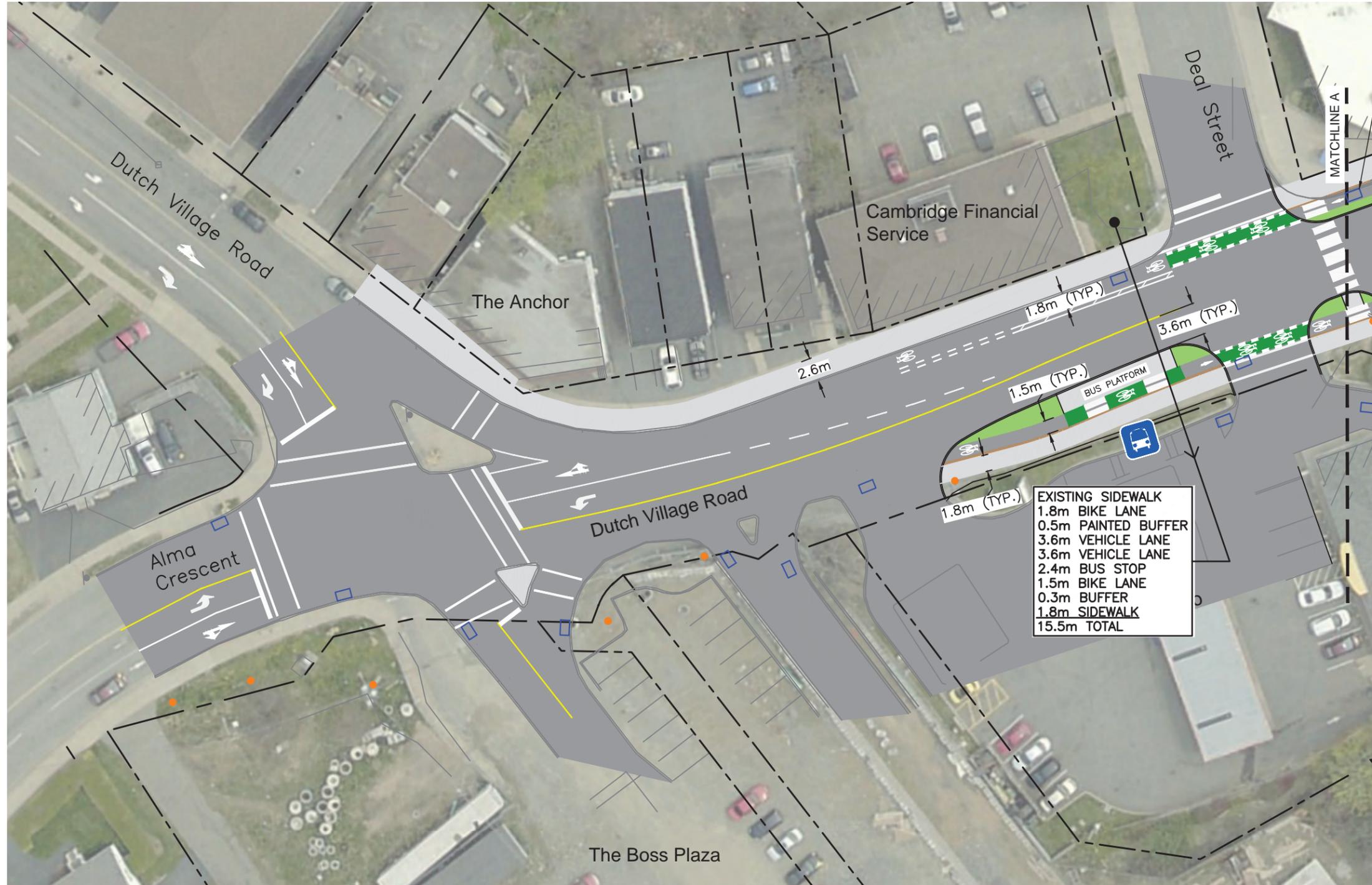
and Bayer's Road and Connaught as they are the bottle necks. I would honestly rather see the money spent on fixing the bottle necks in the city.

- Concerns are the number of vehicles that travel this road during morning/afternoon commute. Already busy but don't see any plans to ease this congestion. The same number of lanes and reduction of lanes in some areas will only add to congestion. This entire block (Joseph Howe, Dutch Village) is at times gridlocked if there are traffic issues getting onto the 102 or at the Windsor Street Exchange.
- Concerned about turning left onto Dutch Village Rd in the mornings. There should be signal lights to ease the traffic flow.
There should be two lanes leading onto the Windsor exchange. One lane turns left which is rarely used.
- I think it looks great. I just want to ensure that there would also be trees planted along the sides. The street is so barren now. Some trees would make a great improvement as well.
- None. This is an excellent plan.
- I'm very concerned about the entry and exit points of the AAA bike lanes. The recent bump outs at Joseph Howe intersection squeeze cyclists into traffic lane, instead of leaving a comfortable buffer. Before bump outs, there was ample room for cyclist to pull up to lights, and cars to safely pass. I understand the AAA concept, but when the lane simply disappears into traffic where cars have no awareness of cyclists, it's a bad idea. Better would be to have a well marked bike lane with street, signs, not separated. Also, much easier for cyclists when joining and leaving bike lane. For example, it looks simple for N to S to COLT trail to connect to bike lane, but what about S to N from COLT or Bayer's road? With all these curbs, cut ins and outs, greatly slows cyclists, not intuitive
- I am concerned about the abrupt end to the cycling routs on each end of the road. I hope the entirety of Titus and Lacewood will be improved with a similar design at some point soon since the road never functions to capacity in the first place.
- I love the look of it. I assume there is enough room for bicycle lanes and sidewalks. Hard to believe. I'm hoping this improves the sight lines at Central and Dutch Village for vehicles. There has already been an increase in illegal parking on Andrew Street at Dutch Village Road. In front of the Ville building, vehicles are always parked and blocking the fire hydrant. Andrew Street is often down to one lane due to the congestion of illegal parking at Andrew and Dutch Village. The alternative being Percy Street and Dutch Village, it is unsafe to make a left-hand turn, so most of the street drives up to Andrew. This parking is a direct result of the Ville building not providing sufficient parking for its tenants. From the designs it looks like you might be planning parallel parking on the road. Look forward to the changes. I will never be on a bike even in my own lane on Dutch Village Road. Way too dangerous.

Appendix D

FUNCTIONAL DESIGN PLAN





EXISTING SIDEWALK
 1.8m BIKE LANE
 0.5m PAINTED BUFFER
 3.6m VEHICLE LANE
 3.6m VEHICLE LANE
 2.4m BUS STOP
 1.5m BIKE LANE
 0.3m BUFFER
 1.8m SIDEWALK
 15.5m TOTAL

NOTES
 1. ALL MODIFICATIONS SHOWN ARE PRELIMINARY AND CONCEPTUAL ONLY.

| LEGEND: | EXISTING | PROPOSED |
|-------------------|----------|----------|
| PROPERTY BOUNDARY | --- | --- |
| CURB | ===== | ===== |
| SIDEWALK | ===== | ===== |
| GREENSPACE | | ===== |
| ASPHALT TRAIL | | ===== |
| UTILITY POLE | ● | ● |
| BUS STOP | | ☐ |
| PAVEMENT MARKINGS | | ===== |
| CATCH BASIN | ☐ | ☐ |

PRELIMINARY

Drawn: E. SEYMOUR
 Reviewed: C. MCCARTHY
 Project #: 181-06948
 Date: MAR. 08, 2019

PROJECT:

DUTCH VILLAGE ROAD
 HALIFAX, NOVA SCOTIA

TITLE:

DUTCH VILLAGE ROAD COMPLETE STREET

FUNCTIONAL DESIGN DRAWINGS

CLIENT:

HALIFAX

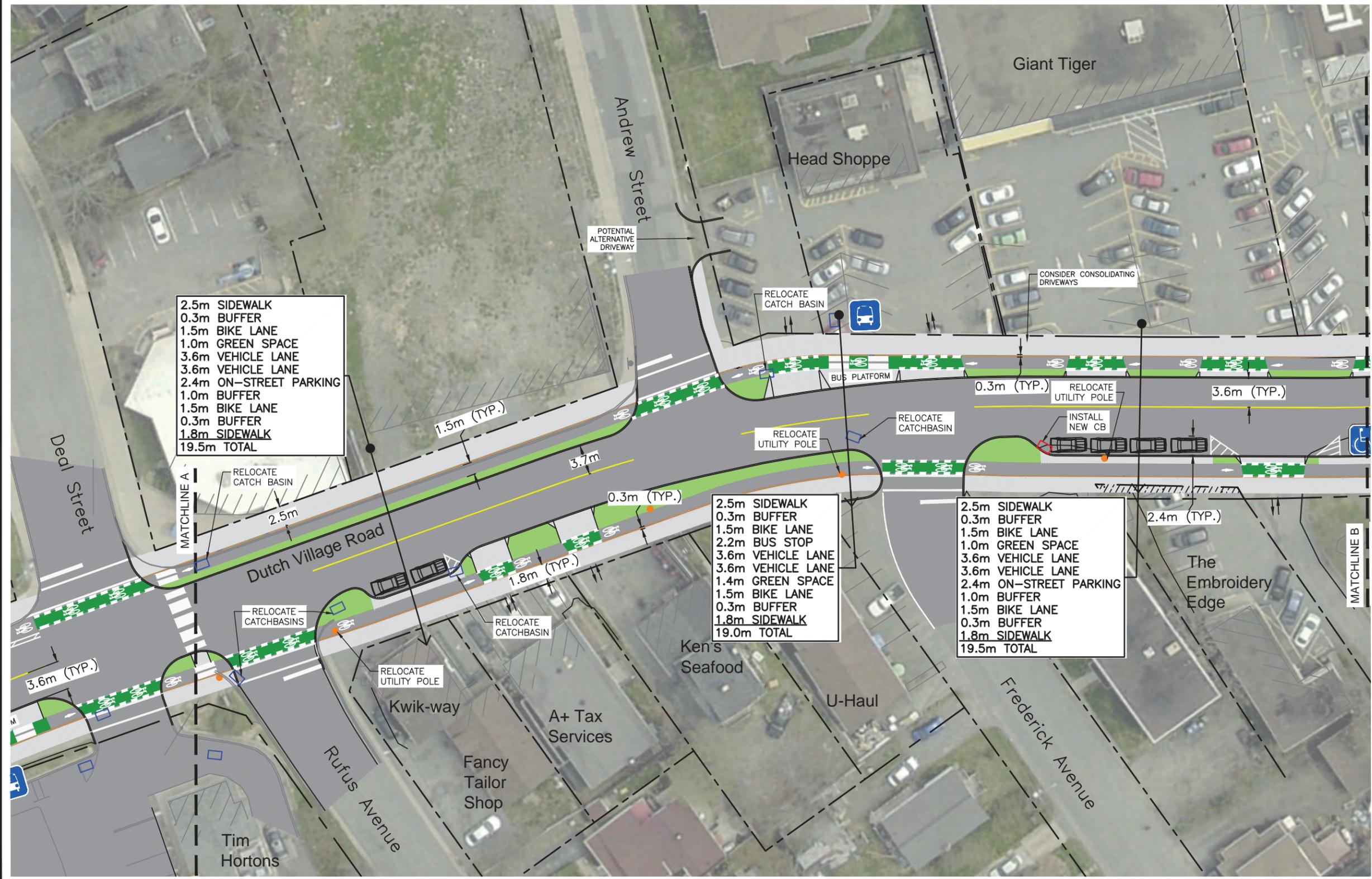
SHEET 1 OF 4

wsp

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 1 Spectacle Lake Drive
 Dartmouth, Nova Scotia, Canada B3B 1X7
 T 902-835-9955 www.wsp.com



FILE: C:\USERS\PHILNICKERSON\DESKTOP\181-06948 - DVR 30% DESIGN.DWG Sheet:Ess0-Alma



2.5m SIDEWALK
 0.3m BUFFER
 1.5m BIKE LANE
 1.0m GREEN SPACE
 3.6m VEHICLE LANE
 3.6m VEHICLE LANE
 2.4m ON-STREET PARKING
 1.0m BUFFER
 1.5m BIKE LANE
 0.3m BUFFER
 1.8m SIDEWALK
 19.5m TOTAL

2.5m SIDEWALK
 0.3m BUFFER
 1.5m BIKE LANE
 2.2m BUS STOP
 3.6m VEHICLE LANE
 3.6m VEHICLE LANE
 1.4m GREEN SPACE
 1.5m BIKE LANE
 0.3m BUFFER
 1.8m SIDEWALK
 19.0m TOTAL

2.5m SIDEWALK
 0.3m BUFFER
 1.5m BIKE LANE
 1.0m GREEN SPACE
 3.6m VEHICLE LANE
 3.6m VEHICLE LANE
 2.4m ON-STREET PARKING
 1.0m BUFFER
 1.5m BIKE LANE
 0.3m BUFFER
 1.8m SIDEWALK
 19.5m TOTAL

NOTES
 1. ALL MODIFICATIONS SHOWN ARE PRELIMINARY AND CONCEPTUAL ONLY.

| LEGEND: | EXISTING | PROPOSED |
|-------------------|----------|----------|
| PROPERTY BOUNDARY | --- | --- |
| CURB | --- | --- |
| SIDEWALK | --- | --- |
| GREENSPACE | --- | --- |
| ASPHALT TRAIL | --- | --- |
| UTILITY POLE | ● | ● |
| BUS STOP | --- | --- |
| PAVEMENT MARKINGS | --- | --- |
| CATCH BASIN | □ | □ |

PRELIMINARY

Drawn: E. SEYMOUR
 Reviewed: C. McCARTHY
 Project #: 181-06948
 Date: MAR. 08, 2019

PROJECT:
DUTCH VILLAGE ROAD
 HALIFAX, NOVA SCOTIA

TITLE:
DUTCH VILLAGE ROAD COMPLETE STREET

FUNCTIONAL DESIGN DRAWINGS

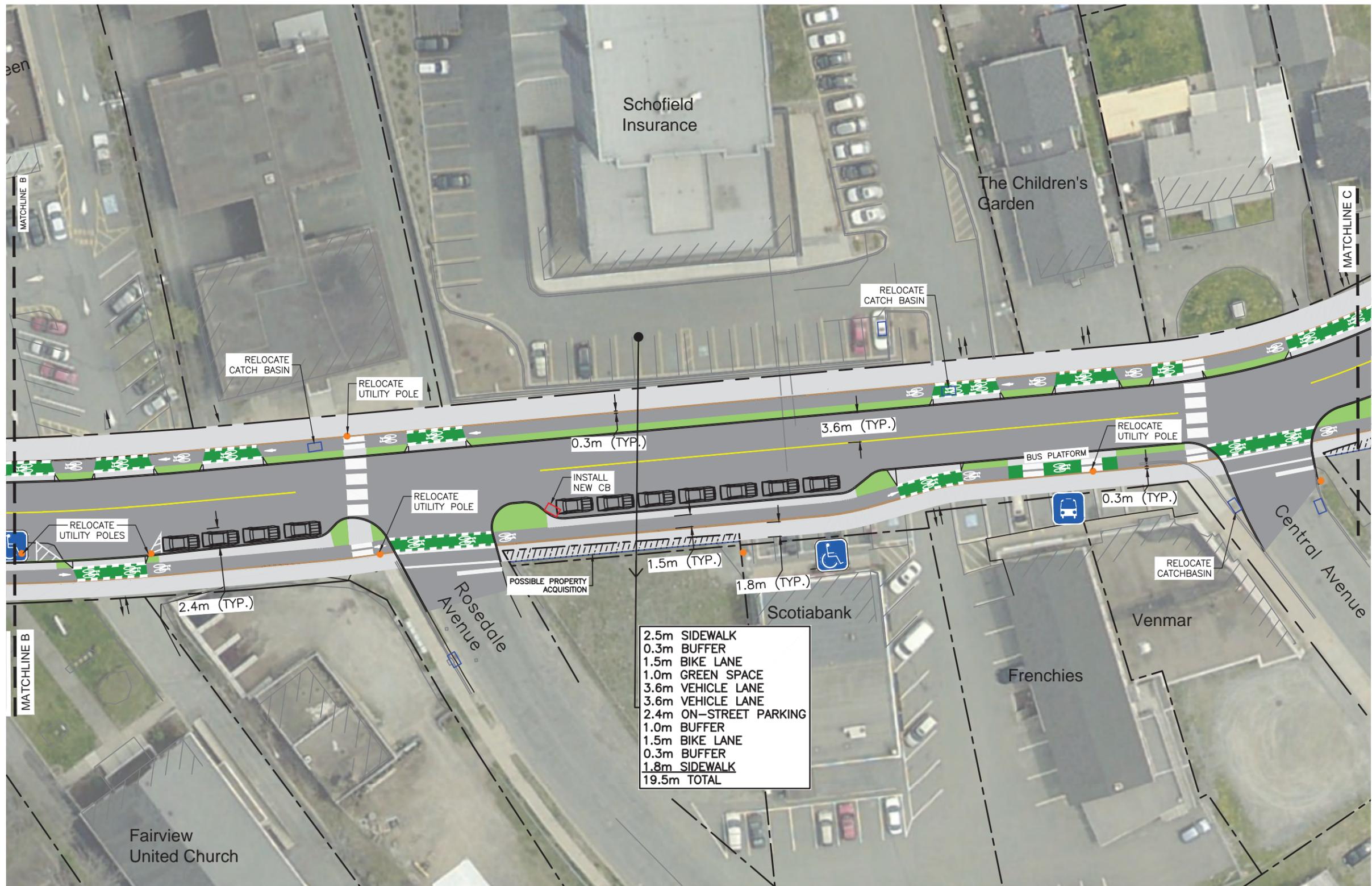
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SHEET 2 OF 4

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NOTES
 1. ALL MODIFICATIONS SHOWN ARE PRELIMINARY AND CONCEPTUAL ONLY.

| LEGEND: | EXISTING | PROPOSED |
|-------------------|----------|----------|
| PROPERTY BOUNDARY | --- | --- |
| CURB | --- | --- |
| SIDEWALK | --- | --- |
| GREENSPACE | --- | --- |
| ASPHALT TRAIL | --- | --- |
| UTILITY POLE | ● | ● |
| BUS STOP | | ☐ |
| PAVEMENT MARKINGS | | --- |
| CATCH BASIN | ☐ | ☐ |

PRELIMINARY

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 Reviewed: C. McCARTHY
 Project #: 181-06948
 Date: MAR. 08, 2019

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DUTCH VILLAGE ROAD
 HALIFAX, NOVA SCOTIA

TITLE:
DUTCH VILLAGE ROAD COMPLETE STREET

FUNCTIONAL DESIGN DRAWINGS

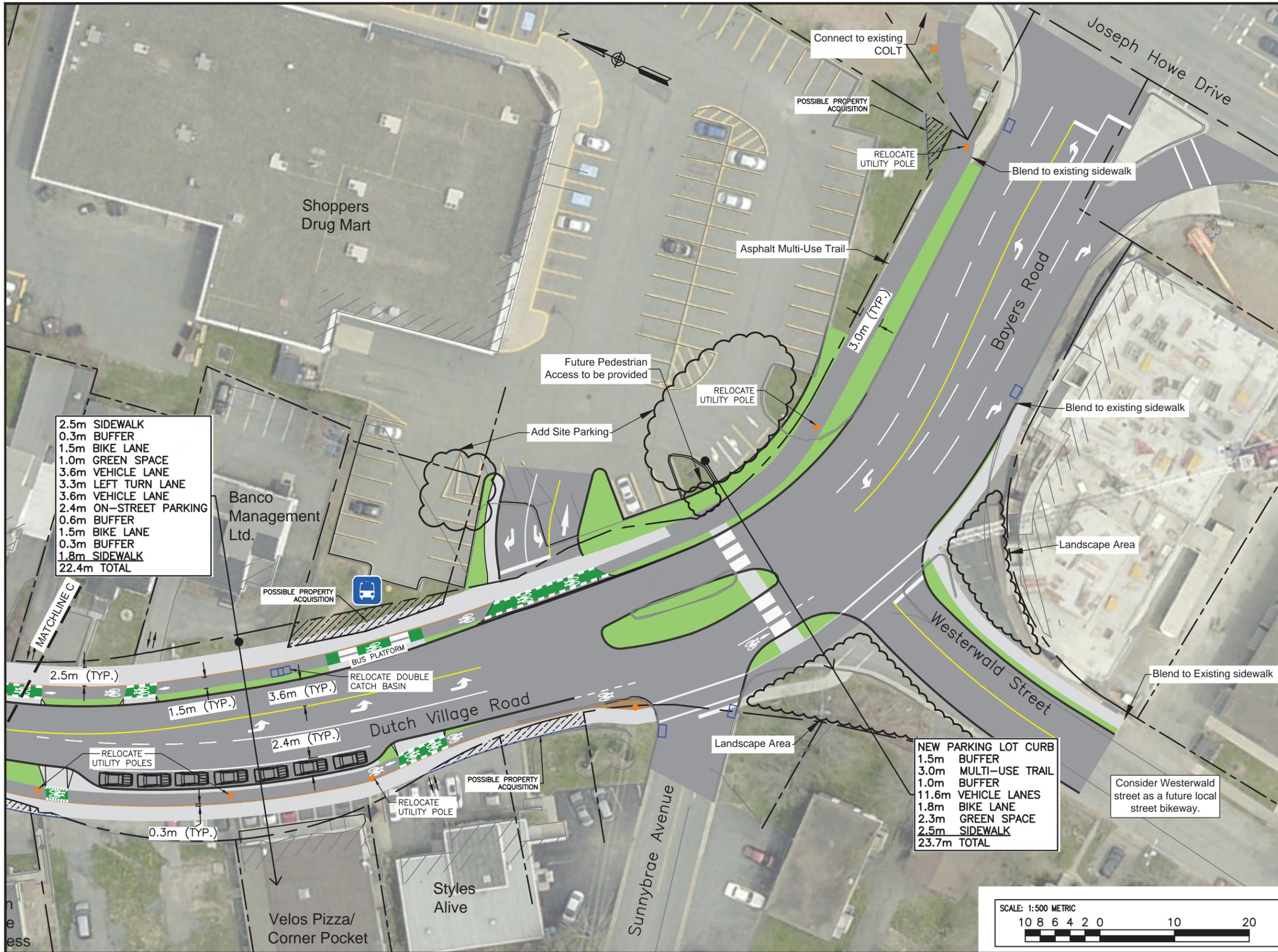
CLIENT:
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SHEET 3 OF 4

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2.5m SIDEWALK
 0.3m BUFFER
 1.5m BIKE LANE
 1.0m GREEN SPACE
 3.6m VEHICLE LANE
 3.3m LEFT TURN LANE
 3.6m VEHICLE LANE
 2.4m ON-STREET PARKING
 0.6m BUFFER
 1.5m BIKE LANE
 0.3m BUFFER
 1.8m SIDEWALK
 22.4m TOTAL

NEW PARKING LOT CURB
 1.5m BUFFER
 3.0m MULTI-USE TRAIL
 1.0m BUFFER
 11.6m VEHICLE LANES
 1.8m BIKE LANE
 2.3m GREEN SPACE
 2.5m SIDEWALK
 23.7m TOTAL



NOTES
 1. ALL MODIFICATIONS SHOWN ARE PRELIMINARY AND CONCEPTUAL ONLY.

| LEGEND: | EXISTING | PROPOSED |
|-------------------|----------|----------|
| PROPERTY BOUNDARY | --- | --- |
| CURB | --- | --- |
| SIDEWALK | --- | --- |
| GREENSPACE | --- | --- |
| ASPHALT TRAIL | --- | --- |
| UTILITY POLE | ● | ● |
| BUS STOP | | ■ |
| PAVEMENT MARKINGS | | --- |
| CATCH BASIN | □ | □ |

PRELIMINARY

Drawn: E. SEYMOUR
 Reviewed: C. McCARTHY
 Project #: 181-06948
 Date: MAR. 08, 2019

PROJECT:
DUTCH VILLAGE ROAD
 HALIFAX, NOVA SCOTIA
 TITLE:
DUTCH VILLAGE ROAD COMPLETE STREET
FUNCTIONAL DESIGN DRAWINGS

CLIENT:
HALIFAX

SHEET 4 OF 4

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Appendix E

COST ESTIMATES



Attachment B: Intersection Improvements & Multimodal Impact Analysis

**Dutch Village Road:
Complete Streets Improvements**

Prepared by:

HRM Strategic Transportation Planning
October 2019

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Introduction

Background

Halifax Regional Municipality (HRM) is currently in the process of planning and designing for active transportation improvements along Dutch Village Road. In early 2019, WSP completed a functional plan for Dutch Village Road (DVR), which recommended unidirectional protected bicycle lanes and sidewalks on both sides of the street between Joseph Howe Drive / Bayers Road and Alma Crescent but did not include either intersection as they were out of scope. However, due to their importance to pedestrian and cyclist safety and comfort and based on feedback from the public and internal stakeholders, staff increased the scope of the functional design study to include both intersections.

Staff are proposing changes to intersection configuration at Alma Crescent / Supreme Court and Bayers Road / Joseph Howe Drive to achieve the design goals of the functional design. The changes would ensure that the bicycle facility connects directly to the Chain of Lakes Trail (COLT), facilitate the potential future continuation of the protected bicycle facility, reduce conflicts between bicycles and right turning vehicles, reduce pedestrian crossing distance, reduce speed of right turning vehicles and improve intersection sightlines. Staff have completed a traffic impact analysis & multimodal level of service (MMLOS) analysis for the proposed changes at both intersections.

Objective

The objective of this report is to present a summary of the proposed intersection changes and a review of the potential multimodal impacts resulting from the extension of the proposed bicycle facility.

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Dutch Village Road / Bayers Road – Joseph Howe Drive Intersection Existing Conditions

The current configuration of the intersection, along with AM and PM peak hour turning movement count data, are illustrated in Figure 1.

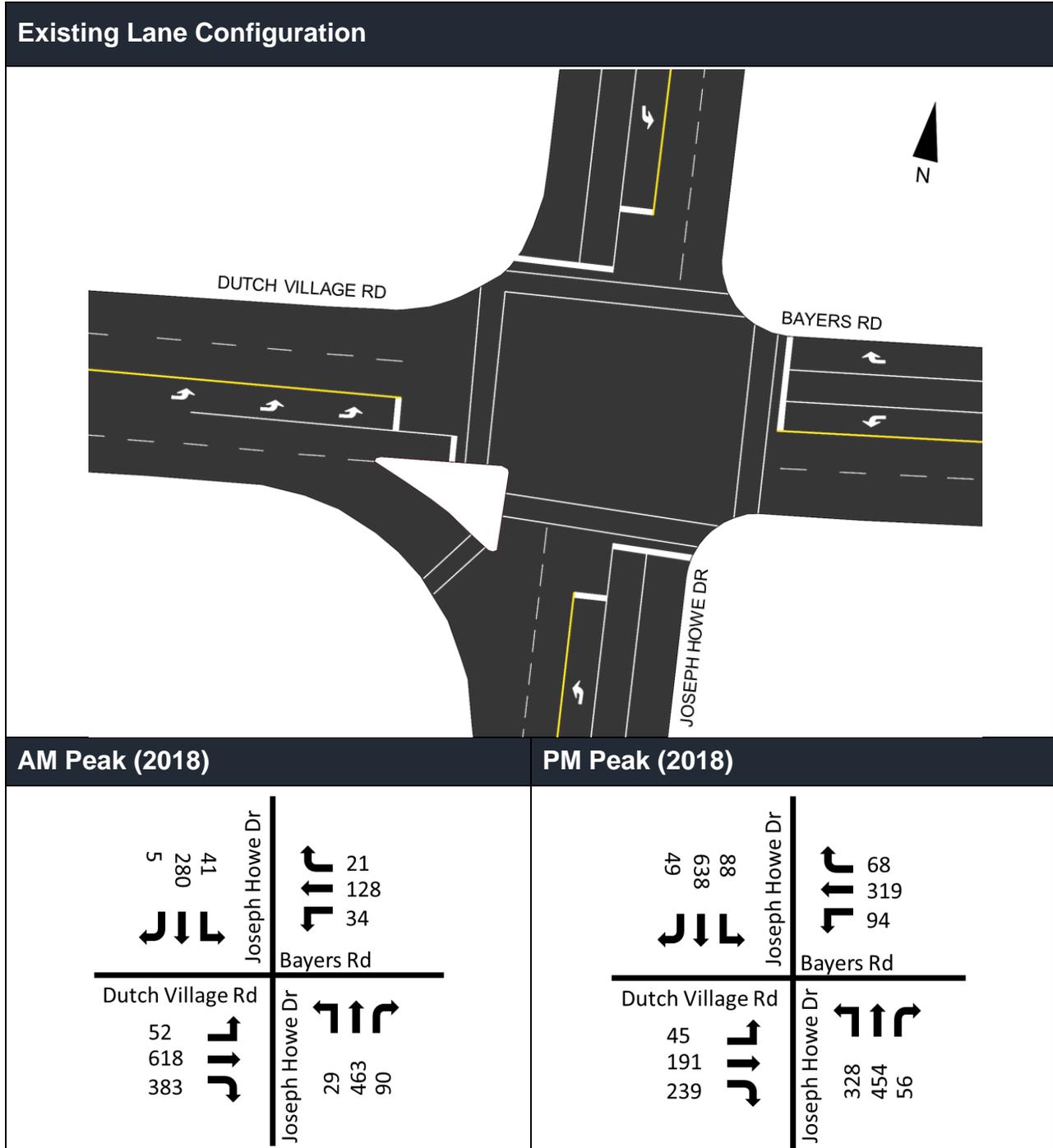


Figure 1: Existing Conditions: Dutch Village Road / Bayers Road @ Joseph Howe Drive

East Side (corners C & D) - Optional:

- There is potential to create a bump-out on the eastbound receiving lane on Bayers Rd (corner “C”) and reduce the radius of corner “D” from 8.3m to 7.5m. These changes would enhance the pedestrian experience by reducing the crossing distance on both the Joseph Howe and Bayers Road legs.
- The left turn lane stop bar on Bayers Road would need to be moved back to accommodate turns by large vehicles.
- The existing walk request button and traffic lights on corner “D” would need to be relocated.
- The addition of the bicycle lane on DVR is not reliant on the modifications to these corners.

Traffic Impact Analysis

Staff completed an intersection performance analysis to evaluate traffic operations based on the existing intersection configurations as well as intersection modifications. The analysis was completed for AM and PM peak periods using Synchro 10 and existing signal timing plans. The intersection performance analysis results are summarized below in Table 1.

The results of the traffic analysis for existing conditions indicate that all movements currently operate within HRM’s acceptable limits. The traffic analysis indicated that the proposed changes will have a minimal impact on traffic operations at the intersections. There’s a possibility that the software is slightly underestimating the impacts of replacing a right turn channel with a dedicated right turn lane, but it shows that the latter still provides sufficient capacity.

Table 1: Intersection Performance Analysis Results: Dutch Village Road / Bayers Road @ Joseph Howe Road

| | | Dutch Village Road | | | Bayers Road | | | Joseph Howe Road | | | | | | |
|---------------------|---------|--------------------|------|-------|-------------|------|-------|------------------|------|------|----|------|------|----|
| | | EB | | | WB | | | NB | | | SB | | | |
| | | L | T | R | L | T | R | L | T | R | L | T | R | |
| Existing Conditions | Am Peak | Count | 52 | 618 | 383 | 34 | 128 | 21 | 29 | 463 | 90 | 41 | 280 | 5 |
| | | Delay | 12.1 | 21.3 | 3.1 | 14.6 | 12.2 | 0 | 21.1 | 23.8 | | 33 | 30.2 | |
| | | V/C | 0.09 | 0.69 | 0.42 | 0.17 | 0.14 | 0.03 | 0.08 | 0.42 | | 0.19 | 0.32 | |
| | | 95th%Queue | 11.6 | 132.3 | 16 | 9.7 | 23.2 | 0 | 10 | 50.8 | | 17 | 39 | |
| | | Int. Delay | 18.8 | | | | | | | | | | | |
| Proposed Conditions | Am Peak | Delay | 12.1 | 21.3 | 3.3 | 14.6 | 12.2 | 0 | 21.1 | 23.8 | | 33 | 30.2 | |
| | | V/C | 0.09 | 0.69 | 0.43 | 0.17 | 0.14 | 0.03 | 0.08 | 0.42 | | 0.19 | 0.32 | |
| | | 95th%Queue | 11.6 | 132.3 | 16.1 | 9.7 | 23.2 | 0 | 10 | 50.8 | | 17 | 39 | |
| | | Int. Delay | 18.8 | | | | | | | | | | | |
| Existing Conditions | PM Peak | Count | 45 | 191 | 239 | 94 | 319 | 68 | 328 | 454 | 56 | 88 | 638 | 49 |
| | | Delay | 37.3 | 33.6 | 6.5 | 35.5 | 41.7 | 8.6 | 17.7 | 9.4 | | 26.1 | 25.3 | |
| | | V/C | 0.31 | 0.42 | 0.43 | 0.37 | 0.71 | 0.17 | 0.7 | 0.27 | | 0.3 | 0.55 | |
| | | 95th%Queue | 20.6 | 61.3 | 19.1 | 35.1 | 103.6 | 11.2 | 52.1 | 35.5 | | 29.3 | 87.8 | |
| | | Int. Delay | 22.2 | | | | | | | | | | | |
| Proposed Conditions | PM Peak | Delay | 37.3 | 33.6 | 6.8 | 35.5 | 41.7 | 8.6 | 17.7 | 9.4 | | 26.1 | 25.3 | |
| | | V/C | 0.31 | 0.42 | 0.45 | 0.37 | 0.71 | 0.17 | 0.7 | 0.27 | | 0.3 | 0.56 | |
| | | 95th%Queue | 20.6 | 61.3 | 19.2 | 35.1 | 103.6 | 11.2 | 52.1 | 35.5 | | 29.3 | 87.8 | |
| | | Int. Delay | 22.3 | | | | | | | | | | | |

Intersection Improvements and Multimodal Impact Analysis

Multi-Modal Level of Service (MMLOS)

The multi-modal level of service (MMLOS) analysis results for the PM peak are summarized in Figure 3. With the addition of unidirectional protected bicycle lanes on Dutch Village Road – the LOS for cyclists improves from an E to a C. The MMLOS target for cyclists is not reached as conflict points still exist – this could be potentially reduced with a two-stage turn box to facilitate left turns from a protected bicycle lane. This will increase the bicycle level of service and can be considered at the detailed design phase.

The MMLOS analysis suggests that there will be no impact to transit, or auto movement. Goods movement will be slightly impacted by the reduction of the effective curb radius. Additionally, the conditions for pedestrians will slightly improve due to the reduced crossing distance at the Dutch Village Road approach and the northbound Joseph Howe Drive approach. That said, the number of uncontrolled conflicts remain, and the cycle length does not change. Even though the proposed changes will positively impact the overall pedestrian realm, the MMLOS tool is coarse-grained and is not sensitive enough to capture all those changes.

| Environment | Uncontrolled Conflicts | Uncontrolled Conflicts | Measures (of Ideal) | Avg. Effective Curb Radius (m) | Turn prohibitions |
|-------------|-------------------------|------------------------|------------------------------|--------------------------------|------------------------------|
| Space | 11-13 | 8-10 | N/A | 3.40 - 3.59 | 35 - 60% |
| Environment | Avg. Crossing Width (m) | Priority Treatments | Transit Movement V/C Ratio | Avg. Effective Curb Radius (m) | Turn prohibitions |
| Environment | 17.5 - 21 | 80 - 89% | < 0.60 | < 11 | 0 |
| Time | Cycle Length (sec) | Cycle Length (sec) | Transit Movement Delay (sec) | Truck Intersection Delay (sec) | Car Intersection Delay (sec) |
| Time | 76 - 90 | 76 - 90 | 21 - 35 | 21 - 35 | 21 - 35 |

| SCENARIO: Dutch Village Road - PM Peak | | | | | |
|--|----------------------------------|----------------------------------|---|--------------------------------|--|
| Area Type: Suburban | | | | | |
| MODE | | | | | |
| Target | C | B | E | E | E |
| Actual | D | D | B | C | B |
| Priority Corridor | No | Yes | No | No | No |
| Space | Number of Uncontrolled Conflicts | Number of Uncontrolled Conflicts | % of Transit Priority Measures (of Ideal) | Avg. Curb Lane Width (m) | % of movements with exclusive turn lanes |
| Space | 11-13 | > 13 | N/A | 3.80 - 3.99 | 60 - 85% |
| Environment | Avg. Crossing Width (m) | Priority Treatments | Transit Movement V/C Ratio | Avg. Effective Curb Radius (m) | Turn prohibitions |
| Environment | > 21 | 30 - 49% | < 0.60 | 15 - 16 | 0 |
| Time | Cycle Length (sec) | Cycle Length (sec) | Transit Movement Delay (sec) | Truck Intersection Delay (sec) | Car Intersection Delay (sec) |
| Time | 76 - 90 | 76 - 90 | 21 - 35 | 21 - 35 | 21 - 35 |

| SCENARIO: Dutch Village Road - PM Peak | | | | | |
|--|----------------------------------|----------------------------------|---|--------------------------------|--|
| Area Type: Suburban | | | | | |
| MODE | | | | | |
| Target | C | B | C | E | E |
| Actual | D | C | B | C | B |
| Priority Corridor | No | Yes | No | No | No |
| Space | Number of Uncontrolled Conflicts | Number of Uncontrolled Conflicts | % of Transit Priority Measures (of Ideal) | Avg. Curb Lane Width (m) | % of movements with exclusive turn lanes |
| Space | 11-13 | 11-13 | N/A | 3.80 - 3.99 | 60 - 85% |
| Environment | Avg. Crossing Width (m) | Priority Treatments | Transit Movement V/C Ratio | Avg. Effective Curb Radius (m) | Turn prohibitions |
| Environment | 17.5 - 21 | 80 - 89% | < 0.60 | < 11 | 0 |
| Time | Cycle Length (sec) | Cycle Length (sec) | Transit Movement Delay (sec) | Truck Intersection Delay (sec) | Car Intersection Delay (sec) |
| Time | 76 - 90 | 76 - 90 | 21 - 35 | 21 - 35 | 21 - 35 |

Figure 3: MMLOS analysis for the existing and proposed conditions for Dutch Village Road / Bayers Road at Joseph Howe Drive

Dutch Village Road – Supreme Court / Alma Crescent Intersection Existing Conditions

The current configuration of the intersection, along with AM and PM peak hour turning movement count data, are illustrated in Figure 4.

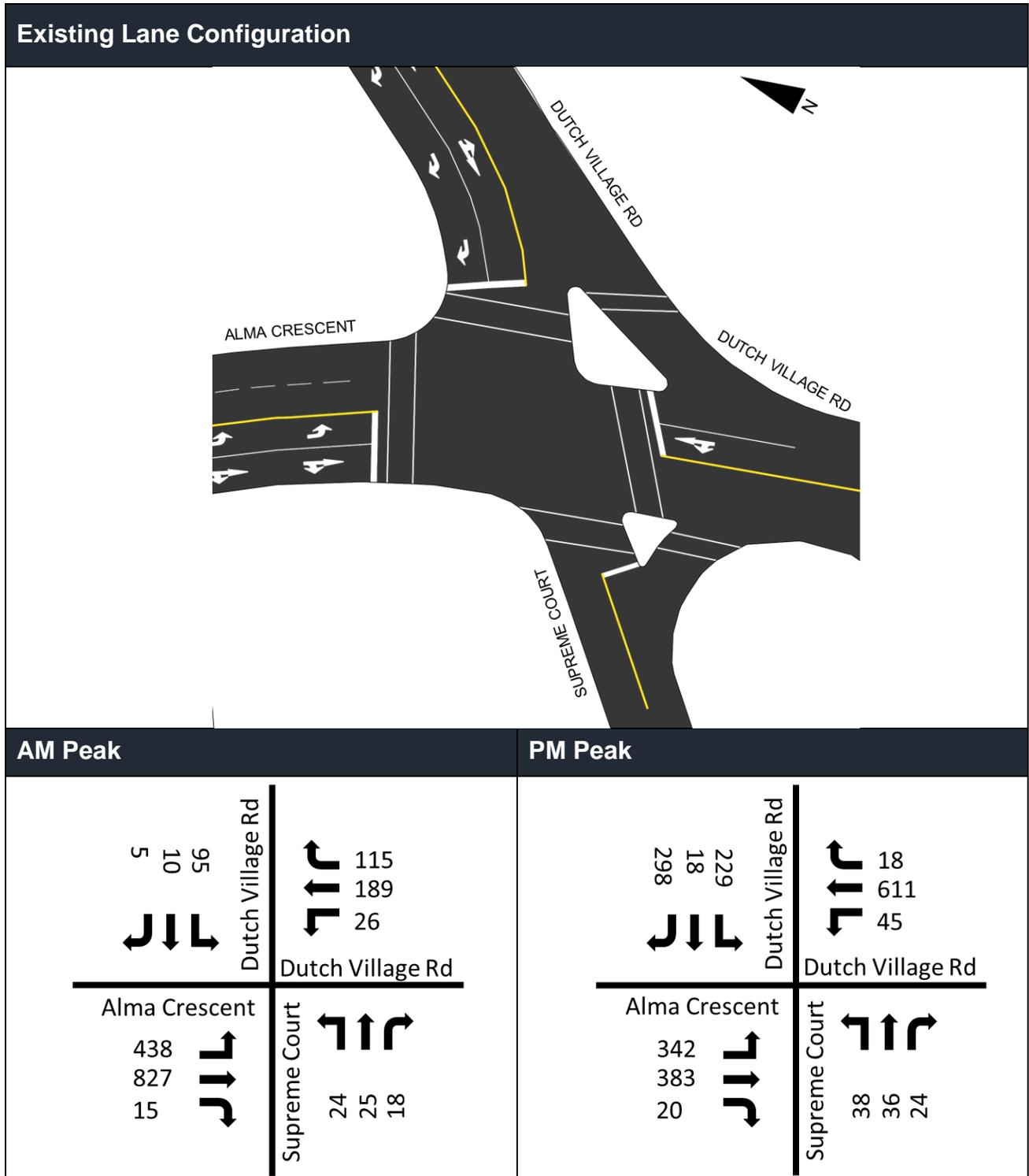


Figure 4: Existing Conditions: Dutch Village Road @ Alma Crescent

Proposed Modifications

This proposal blends with the WSP functional plan at approximately Deal Street. All corner radii have been tested with Autoturn and accommodate turning of heavy single unit trucks, HRM aerial fire trucks and articulated buses. Staff prepared two functional design options for the DVR – Alma Crescent intersection. Option 1 includes unidirectional protected bicycle lanes on both sides of the street up to the intersection, whereas option 2 substitutes the southbound protected bicycle lane with a painted one. Both options are illustrated in Figure 5 & Figure 6. Staff also explored two variations on option 2 (options 2B & 2C) that address a potential conflict at the intersection (illustrated in Figure 7 & Figure 8). All options propose similar modifications to accommodate the northbound bicycle lane on DVR. The following is a description of the proposed modifications:

Notes describing how the proposal would modify each corner of the intersection (labelled A, B, C, & D) are provided below.

Modifications Common to Options 1 & 2:

East Side (corners A & B) – Required:

- A raised protected westbound bicycle lane.
- Loss of approximately five 15-min parking spaces between Alma Crescent and Deal Street Potential for side streets to absorb the parking loss.
- Parking of abutting property, Civic 3617/3619, encroaches on HRM's right-of-way. This concept claims the space for the sidewalk and the bicycle lane.
- Removal of the slip lane on corner "A" of DVR is necessary to extend the bicycle lane to the intersection. This will also improve visibility and mitigate pedestrian and vehicle conflicts.
- Addition of one parking space on DVR facing Civic 3635.
- Better defined driveways for Civic 3617/3619 & Civic 3613/3615.
- Removal of right turn channel at the Supreme Court approach to reduce conflict with cyclists and to extend the eastbound bicycle lane to the intersection.
- No property acquisition is required.

West Side (corners C & D) - Optional:

- Traffic lights would not need to be relocated.

Option 2B:

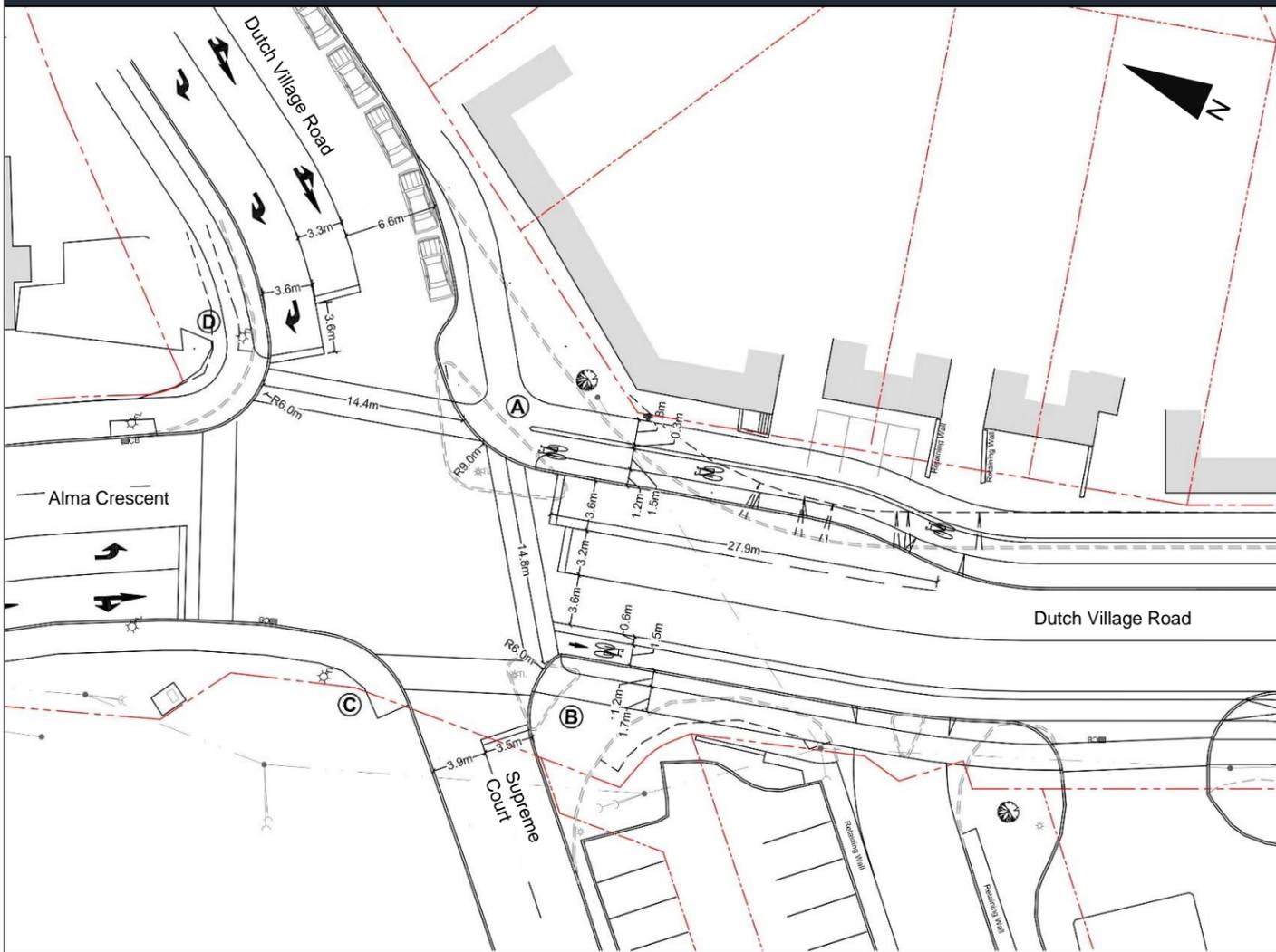


Figure 7: Proposed Intersection Configuration (Option 2B) – Dutch Village Road @ Alma Crescent / Supreme Court

Option 2C:

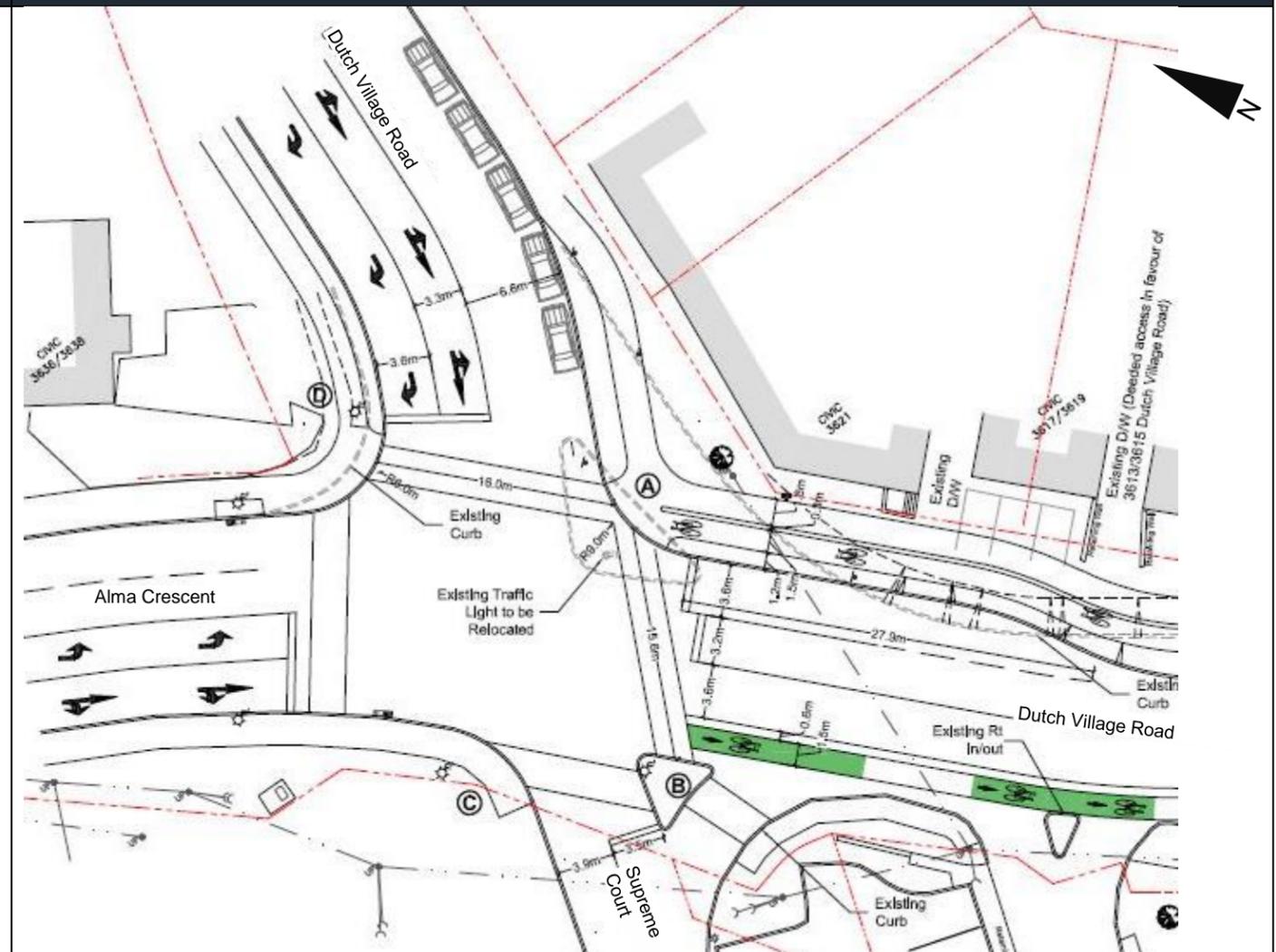


Figure 8: Proposed Intersection Configuration (Option 2C) – Dutch Village Road @ Alma Crescent / Supreme Court

- Option 2B reduces the potential for conflict between right turning vehicles (from DVR to DVR) and left turning vehicles (from DVR to DVR), while attempting to minimize the pedestrian crossing distance (14.4m).
- The radius at corner “A” is 9.0m.
- This option clearly delineates parking spaces on the north/east side of DVR.

- Option 2C also reduces the potential for conflict but produces the longest pedestrian crossing (16m) as it omits a bump-out on corner “A”.
- The radius at corner “A” is 7.5m.
- This option requires modifying the signal timing plans to accommodate the longer crossing distance by increasing the Flash Don't Walk time on the eastbound and westbound approaches (Supreme Court & DVR) from 10s to 16s at the southbound and northbound approaches (Alma Crescent & DVR) from 11s to 16s.

The Project Steering Committee (including representatives from HRM Traffic Management, Active Transportation, and Halifax Transit) reviewed the two functional designs and the variations on Option 2C. There was agreement that Option 2C would best fit the project objectives and reduce potential conflicts between vehicles, pedestrians and cyclists. Option 2 eliminates inconsistency in the cyclist’s experience caused by the number of driveways on the west side of Dutch Village Road. Therefore, staff recommend the implementation of Option 2C. The traffic impact analysis and the MMLOS analysis were completed for the recommended option and are described in the following section.

Traffic Impact Analysis

Staff completed an intersection performance analysis to evaluate traffic operations based on the existing intersection configurations as well as intersection modifications for the preferred Option 2C. The analysis was completed for the AM and PM peak periods using Synchro 10 and existing and proposed signal timing plans. The intersection performance analysis results are summarized below in .

Table 2.

The results of the traffic analysis for existing conditions indicate that all movements currently operate within HRM’s acceptable limits. The traffic analysis indicated that the proposed changes will have minimal impact on traffic operations at the intersections.

Table 2: Intersection Performance Analysis Results: Dutch Village Road @ Alma Crescent / Supreme Court

| | | | Dutch Village Road | | | | | | Supreme Court | | | Alma Crescent | | |
|---------------------|---------|------------|--------------------|-----|-----|------|-----|-----|---------------|----|----|---------------|-----|----|
| | | | NB | | | WB | | | EB | | | SB | | |
| | | | L | T | R | L | T | R | L | T | R | L | T | R |
| Existing Conditions | Am Peak | Count | 26 | 189 | 115 | 95 | 10 | 5 | 24 | 25 | 18 | 438 | 827 | 15 |
| | | Delay | 11.1 | | | 37.3 | | | 0 | | | 25.9 | | |
| | | V/C | 0.27 | | | 0.42 | | | 0.01 | | | 0.23 | | |
| | | 95th%Queue | 23.8 | | | 33.5 | | | 0 | | | 19.4 | | |
| | | Int. Delay | 14.2 | | | | | | | | | | | |
| Proposed Conditions | Am Peak | Delay | 14.6 | | | 33.1 | | | 0 | | | 23.2 | | |
| | | V/C | 0.30 | | | 0.34 | | | 0.01 | | | 0.18 | | |
| | | 95th%Queue | 27.5 | | | 33 | | | 0 | | | 18.9 | | |
| | | Int. Delay | 18 | | | | | | | | | | | |
| Existing Conditions | PM Peak | Count | 45 | 611 | 79 | 229 | 118 | 298 | 38 | 36 | 24 | 342 | 383 | 20 |
| | | Delay | 28.5 | | | 49.4 | | | 6.3 | | | 25.4 | | |
| | | V/C | 0.65 | | | 0.78 | | | 0.51 | | | 0.29 | | |
| | | 95th%Queue | 95.7 | | | 81.4 | | | 19.3 | | | 26.9 | | |
| | | Int. Delay | 23.3 | | | | | | | | | | | |
| Proposed Conditions | PM Peak | Delay | 29.2 | | | 47.2 | | | 6 | | | 25.2 | | |
| | | V/C | 0.66 | | | 0.76 | | | 0.49 | | | 0.28 | | |
| | | 95th%Queue | 95.6 | | | 81.8 | | | 19.2 | | | 26.9 | | |
| | | Int. Delay | 23.5 | | | | | | | | | | | |

Multi-Modal Level of Service (MMLOS)

The multi-modal level of service (MMLOS) analysis results for the PM peak are summarized in Figure 9. According to the analysis, the conditions for cyclists improve slightly with the addition of bicycle lanes on Dutch Village Road. However, the analysis also shows that the LOS does not improve beyond a D as the approaches on Supreme Court, Alma Crescent do not have any bicycle facilities on them nor are there plans for any at the time being. The conditions for pedestrians improve as the pedestrian crossing changes from a 24.5m two-stage crossing to a 16.0m one-stage crossing. The removal of the right turn channel also reduces the number of uncontrolled conflict points between pedestrians and vehicles. Conditions for transit and automobiles do not change. However, conditions for goods movement slightly worsen with the reduction of the turn radii and the width of the curb lanes.

| SCENARIO: Dutch Village Road - PM Peak | | | | | |
|--|----------------------------------|----------------------------------|---|--------------------------------|--|
| Area Type: Suburban | | | | | |
| MODE | | | | | |
| Target | C | B | B | E | E |
| Actual | E | D | B | C | B |
| Priority Corridor | No | No | No | No | No |
| Space | Number of Uncontrolled Conflicts | Number of Uncontrolled Conflicts | % of Transit Priority Measures (of Ideal) | Avg. Curb Lane Width (m) | % of movements with exclusive turn lanes |
| | 11-13 | 8-10 | N/A | 3.40 - 3.59 | 35 - 60% |
| Environment | Avg. Crossing Width (m) | Priority Treatments | Transit Movement V/C Ratio | Avg. Effective Curb Radius (m) | Turn prohibitions |
| | 17.5 - 21 | 30 - 49% | 0.60 - 0.69 | 13 - 14 | 0 |
| Time | Cycle Length (sec) | Cycle Length (sec) | Transit Movement Delay (sec) | Truck Intersection Delay (sec) | Car Intersection Delay (sec) |
| | 76 - 90 | 76 - 90 | 21 - 35 | 21 - 35 | 21 - 35 |

Figure 9: MMLOS analysis for the existing and proposed conditions for Dutch Village Road at Supreme Court / Alma Crescent

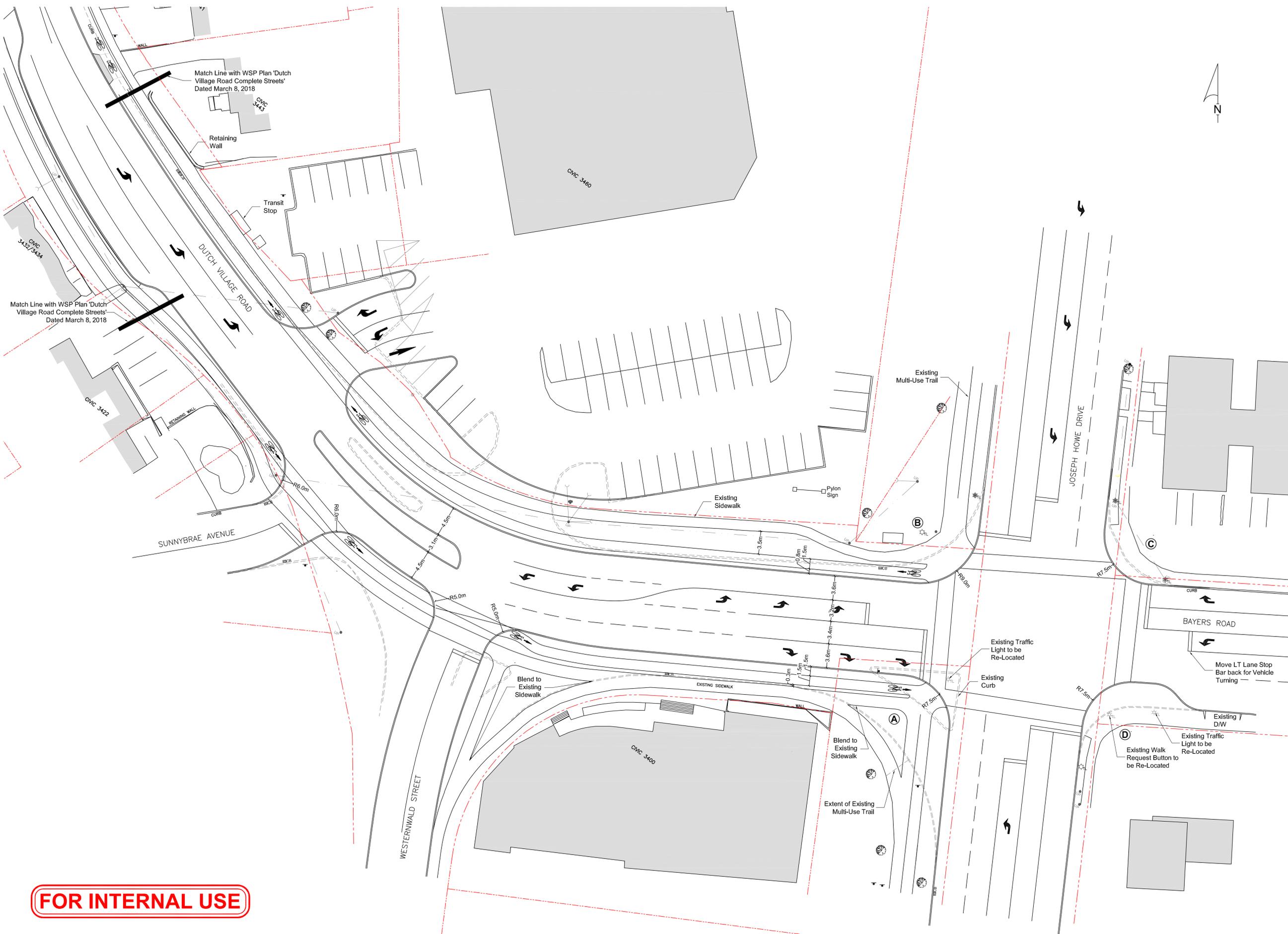
| Environment | Avg. Crossing Width (m) | Priority Treatments | Transit Movement V/C Ratio | Avg. Effective Curb Radius (m) | Turn prohibitions |
|-------------|-------------------------|---------------------|----------------------------|--------------------------------|-------------------|
| Target | 17.5 - 21 | 30 - 49% | 0.60 - 0.69 | 13 - 14 | 0 |
| Actual | D | C | B | C | B |

Concluding Thoughts

Staff have completed an analysis of the traffic impacts and the Multi-Modal Level of Service impacts associated with the proposed intersection upgrades on Dutch Village Road. These findings supplement the analyses for the various functional design options considered for the Dutch Village Road / Bayers Road at Joseph Howe Drive and Alma Crescent / Supreme Court intersections. The proposed changes will facilitate the extension of the DVR bicycle lanes and provide a direct connection to the Chain of Lakes Trail (COLT). They also confer some benefits upon pedestrians at each intersection.

Overall, the traffic impact analysis suggests that there will be a minimal impact to traffic operations along the corridor (during peak periods). The MMLOS analysis suggests that the design will improve conditions for cyclists and pedestrians. The analysis also suggests that any impacts to transit, goods movement and automobiles will be very minimal and would not impede their operations.

DVR/ Joseph Howe & Bayers Road Intersection Conceptual Design



Legend

| | |
|--|----------------------|
| | Property Boundaries |
| | Curb (Proposed) |
| | Curb (Existing) |
| | Overhead Wire |
| | Utility Pole |
| | Guy Wire |
| | Traffic Light |
| | Traffic Light (Demo) |
| | Road Sign |
| | Fire Hydrant |
| | Catch Basin |
| | Bike Yield Symbol |
| | Conner Labels |

- Notes:**
- Truck turn analysis performed with articulated bus, Heavy Single Unit (HSU) truck and HRM Aerial Fire truck. See 'Design Vehicle Turn Analysis'.
 - DVR not a truck route from Joe Howe to Alma Crescent

- Sources:**
- WSP Plan 'Dutch Village Road Complete Streets' Dated March 8, 2018
 - Highland Geomatics & Engineering Inc 'Plan of Survey of Dutog Village Road', dated May 11, 2018
 - 2018 Pictometry Aerial photography

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Scale 1:250

Project No: 18-001 June 10, 2019

FOR INTERNAL USE

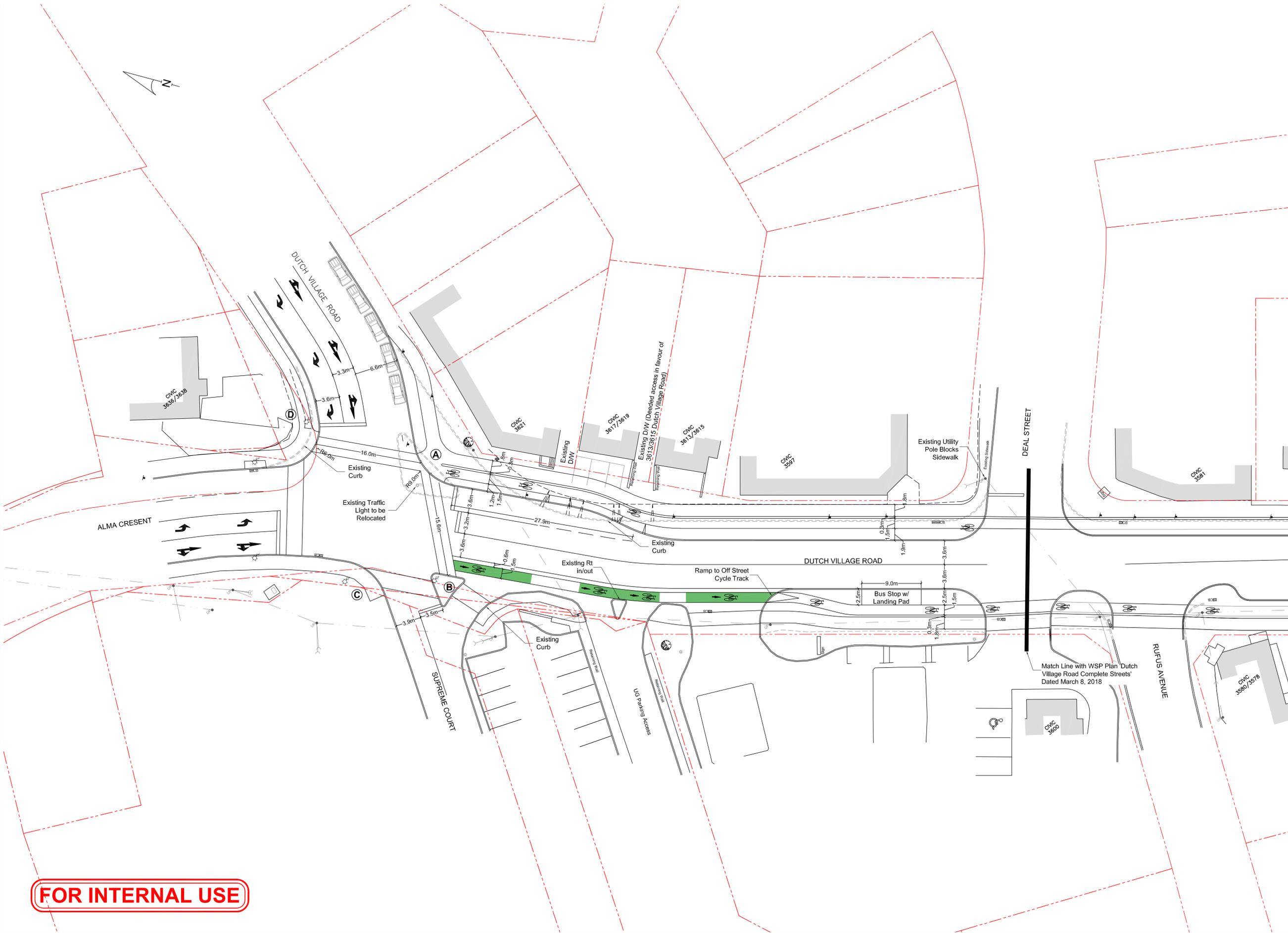
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DVR/ Supreme Court & Alma Crescent Intersection Conceptual Design (C)

| Legend | |
|--------|--|
| | Property Boundaries (Provincial Mapping) |
| | Curb (Proposed) |
| | Curb (Existing) |
| | Overhead Wire |
| | Utility Pole |
| | Guy Wire |
| | Traffic Light |
| | Traffic Light (Demo) |
| | Road Sign |
| | Fire Hydrant |
| | Catch Basin |
| | Bike Yield Symbol |
| | Conner Labels |

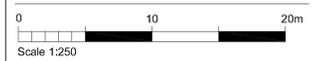
Notes:

- Truck turn analysis performed with articulated bus, HRM Aerial Fire truck and WB-20 (to existing gas station). See 'Design Vehicle Turn Analysis'.
- DVR not a truck route from Joe Howe to Alma Crescent



FOR INTERNAL USE

- Sources:
- WSP Plan 'Dutch Village Road Complete Streets' Dated March 8, 2018
 - Highland Geomatics & Engineering Inc 'Plan of Survey of Dutch Village Road', dated May 11, 2018
 - Nova Scotia Provincial Property Mapping
 - 2018 Pictometry Aerial photography



Project No: 18-001 May 17, 2019

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| | | Attachment D | |
|---|--|---|--|
| # | What do you like about the proposed functional plan for Dutch Village Road between Alma Crescent and Bayer's Road? | Do you have any questions, comments or concerns about the proposed functional plan? | |
| 1 | The protected bikelane and west side sidewalk | | |
| 2 | The focus on active transportation and transit priority is excellent! | The lack of east/north-bound AAA cycling infrastructure connection near Joseph Howe is disappointing. The quality of the cycling infrastructure goes from AAA level to sharing the road with 3 lanes of traffic. The priority is again given to traffic capacity instead of cyclist safety. | |
| 3 | Pedestrian island is very good progress, also sidewalk and cycle lanes. Bump outs at crosswalk locations are really needed on this road due to fast moving traffic, so this is very welcome. | <p>There is no infrastructure for cyclists at the intersection of Jo Howe and DRV, where cyclists are most vulnerable to traffic incidents - this is needed. Measures such as advance boxes and cycle lanes through the intersections should be considered to allow connectivity, as well as a cycle lane along Titus and Lacewood and to connect with the multi purpose route on Jo Howe.</p> <p>The turning lane from DVR onto Jo Howe is surplus to requirements and makes the road unnecessarily wide. Why not remove this and turn this land into a community feature - some trees perhaps?</p> <p>I would also welcome more points to cross the road by using pedestrian islands, as the crosswalks are far apart. Ped. islands can be used instead of crosswalks to cross a road safely. Many pedestrians do cross the road at key points such as by Giant Tiger - desire lines should be allowed for in the design plans.</p> <p>I am not sure why we need on street parking in addition to the existing car parking lot. There is adequate space already and the parking is at a location where pedestrians often cross the road. The cars will restrict their view and that of drivers.</p> | |
| 4 | Everything! I think it makes the area more walkable and easier to access for all. I really like the pedestrian improvements around shoppers drug mart (which is awful to navigate with my son's stroller) as well as the sidewalks on both sides of Dutch village. | I feel that Dutch Village and surrounding area could be the "new north end" and having green spaces and some seating like benches would make it more of a destination. Somewhere you can park your car or bike, walk to or jump of the bus and access services and spend some time in the area will be good for all! I feel sad for the businesses in the area because even though I live less 5 minutes walking distance from most of these businesses I avoid the area because of the lack of walkability. I think these changes will increase the number of businesses in the area and will be so good for the neighbourhood | |
| 5 | I like the changes to the parking at the businesses. Changing the shoppers entrance isn't bad. And adding the median to eliminate people going up Sunnybrae Dr. | I do not like the elimination of the turn lane on Westerwald. It is painful now let alone when someone will be there turning left. That will totally slow down getting out. The left turn lane allows people to merge into the roadway. This will slow it down so we never get out! | |
| 6 | | Disappointed to see the intersection with Alma Crescent is not included. Can a solution be found to connect the west side bike lane to the Chain of Lakes trail on the southwest side of the intersection with Joseph Howe as well? | |
| 7 | | Stop talking start doing... the area is an eye sore | |
| 8 | It is fantastic! Improved sidewalks and a new bike lane is so badly needed here. It's an unsafe area that is rapidly growing and I'm looking forward to seeing the positive changes, thank you! | Does the bike lane on DVR (along Shoppers Drugmart) connect all the way to Joe Howe? It looks like it stops right after the driveway for Shoppers, it would be great if it connected to Joe Howe and the major bike route there. | |

| | | |
|----|---|---|
| 9 | Improved sidewalk infrastructure. | I'm concerned about local businesses reactions to the reduction of parking on the west side of the street. |
| 10 | Having a side walk and some parking to use the services on the street would be great. I think this is a great improvement for the fairview area, that I would like to see for the rest of the fairview as well. | Currently many people use dutch village as a two lane road going towards Halifax, since the right turn towards the highway is usually slower during the morning. I think this should be taken into consideration, since reducing the size of the road would cause a lot more traffic in the area. |
| 11 | 1. Like proposed median to block illegal turn onto Sunnybrae 2. Like proposed sidewalks and crosswalks on Dutch Village Rd | 1. Strongly oppose bike lane on Dutch Village. Any bike traffic would travel on Joe Howe. Have the project team assessed bike lane needs on the street? With new housing developments in the area traffic will greatly - and has already- increased. We need better road space for vehicles not the very sparse bike traffic. 2. Sunnybrae needs a sidewalk. There's a school on the street! |
| 12 | I like that it will create an organized, rejuvenated road that will provide safety to an area that has a lot of pedestrians | I dont believe the planners spent enough time considering the traffic flows on Dutch Village. It is very hard to turn left on to Dutch Village from all connecting streets because there are rarely breaks in traffic. This is due to lack of stop signs etc. I am also concerned that buses will not be able to safely make a right turn from Rosedale on to Dutch Village with the reduced lane sizes. Ultimately, it would be great to see less traffic on Dutch Village but that would mean a better plan for Windsor street exchange and bayer's road and connaught as they are the bottle necks. I would honestly rather see the money spent on fixing the bottle necks in the city |
| 13 | I am quite pleased with the plan. Provides a much needed facelift for the area and will make the neighbourhood more pleasant and feel more like a neighbourhood. I hope it can be implemented! | |
| 14 | The look and feel of the proposed plan to make it more aesthetically and pedestrian friendly. Hopefully a narrower roadway will slow cars down as cars travel excessively fast in this area. Removing some parking, parking lot entrances/exits to help alleviate congestion is also a good move. | Concerns are the number of vehicles that travel this road during morning/afternoon commute. Already busy but don't see any plans to ease this congestion. The same number of lanes and reduction of lanes in some areas will only add to congestion. This entire block (Joseph Howe, Dutch Village) is at times gridlocked if there are traffic issues getting onto the 102 or at the Windsor Street Exchange. |
| 15 | It becomes a walkable community | Concerned about turning left onto Dutch Village Rd in the mornings. There should be signal lights to ease the traffic flow. There should be two lanes leading onto the Windsor exchange. One lane turns left which is rarely used. |
| 16 | Yes! | I think it looks great. I just want to ensure that there would also be trees planted along the sides. The street is so barren now. Some trees would make a great improvement as well. |
| 17 | The increased pedestrian and bicycle usage is a tremendous improvement. The absence of sidewalks on the west side of Dutch Village Road is a big problem which this plan addresses. New protected bike lanes are the way to go. This plan would improve the whole area. | None. This is an excellent plan. |

| | | |
|----|--|---|
| 18 | Sidewalks and bus stops are definitely welcomed addition and sorting out the free for all parking situation. | <p>I'm very concerned about the entry and exit points of the AAA bike lanes. The recent bump outs at Joseph Howe intersection squeeze cyclists into traffic lane, instead of leaving a comfortable buffer. Before bump outs, there was ample room for cyclist to pull up to lights, and cars to safely pass.</p> <p>I understand the AAA concept, but when the lane simply disappears into traffic where cars have no awareness of cyclists, it's a bad idea. Better would be to have a well marked bike lane with street, signs, not separated. Also much easier for cyclists when joining and leaving bike lane. For example, it looks simple for N to S to CCLT trail to connect to bike lane, but what about S to N from CCLT or Bayer's road? With all these curbs, cut ins and outs, greatly slows cyclists, not intuitive.</p> |
| 19 | I like the pedestrian improvements and the bike lanes added to the street. I also like the bump out crosswalks that help separate parking areas. And the bump out bus stops are another plus since it removes the problem of leaving and entering traffic (which is what I hope the municipality does for all of Spring Garden instead of just half). I know many people have concerns about the parking, but the plan organizes the spots and removes the problem of perpendicular parking. | I am concerned about the abrupt end to the cycling routes on each end of the road. I hope the entirety of Titus and Lacewood will be improved with a similar design at some point soon since the road never functions to capacity in the first place. |
| 20 | I think any upgrade would be splendid. | <p>I love the look of it. I assume there is enough room for bicycle lanes and sidewalks.</p> <p>Hard to believe. I'm hoping this improves the sight lines at Central and Dutch Village for vehicles. There has already been an increase in illegal parking on Andrew Street at Dutch Village Road. In front of the Ville building, vehicles are always parked and blocking the fire hydrant. Andrew Street is often down to one lane due to the congestion of illegal parking at Andrew and Dutch Village. The alternative being Percy Street and Dutch Village, it is unsafe to make a left hand turn, so most of the street drives up to Andrew. This parking is a direct result of the Ville building not providing sufficient parking for its tenants. From the designs it looks like you might be planning parallel parking on the road. Look forward to the changes.</p> <p>I will never be on a bike even in my own lane on Dutch Village Road. Way too dangerous.</p> |

I would like to see pull over lanes for public transit rather than a bus stop blocking a lane of traffic

Bicycle lanes and green space are very important. I'm not sure of the importance of having on street parking, especially across from the Dairy Queen and Giant Tiger when there is ample parking in both locations.

The vacant lot on the corner of Dutch Village and Rosedale is a contaminated property due to the previous location of a gas station. This is a very small lot and would be very expensive to clean up. Therefore, it may be a good idea to make this a public space.

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Many people may not know this, but the great country music star Hank Snow married Minni Aalders who is from Fairview. Hank was from Shelburne and spent a lot of time in Fairview walking these streets as he made his way to see in CHNS radio to perform live. Hank went on to become a world-class performer in Nashville, performing regularly at the Grand Ole Opry and is inducted into Country Music Hall of Fame.

Perhaps, the potential green space mentioned above could be an ideal location for a bronze statue in recognition of his great talent.

