1. Jockvale Road Multi-Use Pathway Rail Grade-Separation Environmental Assessment (EA) Study - Recommendations

Étude d'évaluation environnementale d'un saut-de-mouton ferroviaire au sentier polyvalent du chemin Jockvale – Recommandations

COMMITTEE RECOMMENDATIONS

That Council:

1. **approve the functional design for Jockvale Road Multi-Use Pathway (MUP) Rail Grade-Separation (underpass), as described in the report; and,**
2. **direct Transportation Planning staff to finalize the Environmental Study Report (ESR) and proceed with its posting for the 30-day public review period, in accordance with the Ontario Municipal Class Environmental Assessment process for Schedule C projects.**

RECOMMANDATIONS DU COMITÉ

Que le Conseil :

1. **approuve la conception fonctionnelle du saut-de-mouton ferroviaire (passage inférieur) du sentier polyvalent du chemin Jockvale telle qu'elle est présentée dans le rapport; et,**
2. **demande au personnel de la Planification des transports de terminer le rapport d'étude environnementale et de le publier pour la période de consultation publique de 30 jours, conformément au processus d'évaluation environnementale municipale de portée générale de l'Ontario pour les projets visés par l'annexe C.**

DOCUMENTATION / DOCUMENTATION

1. General Manager's report, Transportation Services Department, dated 23 August 2019 (ACS2019-TSD-PLN-0003)

   Rapport du Directeur général, Direction générale des transports, daté le 23 août 2019 (ACS2019-TSD-PLN-0003)

2. Extract of Draft Minute, Transportation Committee, 4 September 2019.

   Extrait de l'ébauche du procès-verbal de la Comité des transports, le 4 septembre 2019.

Report to
Rapport au:

Transportation Committee
Comité des transports
4 September 2019 / 4 septembre 2019

and Council
et au Conseil
11 September 2019 / 11 septembre 2019

Submitted on August 23, 2019
Soumis le 23 août 2019

Submitted by
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Ward: BARRHAVEN (3) **File Number**: ACS2019-TSD-PLN-0003

SUBJECT: Jockvale Road Multi-Use Pathway Rail Grade-Separation Environmental Assessment (EA) Study - Recommendations

OBJET: Étude d'évaluation environnementale d'un saut-de-mouton ferroviaire au sentier polyvalent du chemin Jockvale – Recommandations

REPORT RECOMMENDATIONS

That the Transportation Committee recommend that Council:

1. **Approve the functional design for Jockvale Road Multi-Use Pathway (MUP) Rail Grade-Separation (underpass), as described in the report; and,**

2. **Direct Transportation Planning staff to finalize the Environmental Study Report (ESR) and proceed with its posting for the 30-day public review period, in accordance with the Ontario Municipal Class Environmental Assessment process for Schedule C projects.**

RECOMMANDATIONS DU RAPPORT

Que le Comité des transports recommande au Conseil :

1. **d'approuver la conception fonctionnelle du saut-de-mouton ferroviaire (passage inférieur) du sentier polyvalent du chemin Jockvale telle qu'elle est présentée dans le rapport; et,**

2. **de demander au personnel de la Planification des transports de terminer le rapport d'étude environnementale et de le publier pour la période de consultation publique de 30 jours, conformément au processus d'évaluation environnementale municipale de portée générale de l'Ontario pour les projets visés par l'annexe C.**

EXECUTIVE SUMMARY

The Jockvale Road Multi-Use Pathway (MUP) is an important active transportation route in Barrhaven. The MUP is located on the west side of Jockvale Road and is used by hundreds of pedestrians and cyclists every day going to and from school, places of worship and other destinations. The MUP currently crosses the VIA Rail line at-grade where today an average of 19 trains pass per weekday. The rail traffic is expected to increase to 37 daily trains by 2031. The need to grade-separate this MUP is identified in the Barrhaven and Merivale Road Rail Crossing Grade Separation study, approved by Council in June 2017. Grade-separation of Jockvale Road at the VIA Rail crossing is also part of the Barrhaven Rail Safety Program (BRSP), but it is beyond the scope of this Environmental Assessment (EA) study.

The EA study recommends an underpass for the MUP as it crosses the VIA Rail tracks. Figure 1(a) shows the study area while Figures 1(b) and 1(c) show 3-D illustrations of the Recommended Plan. The underpass includes a 15-metre long structure with a 3-metre vertical clearance, a 3-metre wide MUP and an additional 0.5-metre buffer on each side. The underpass would be located approximately 20 metres west of the Jockvale Road centerline to ensure compatibility with the future grade-separation of Jockvale Road where it crosses the VIA Rail tracks. The pathway would gently rise back to grade-level on either side of the underpass.

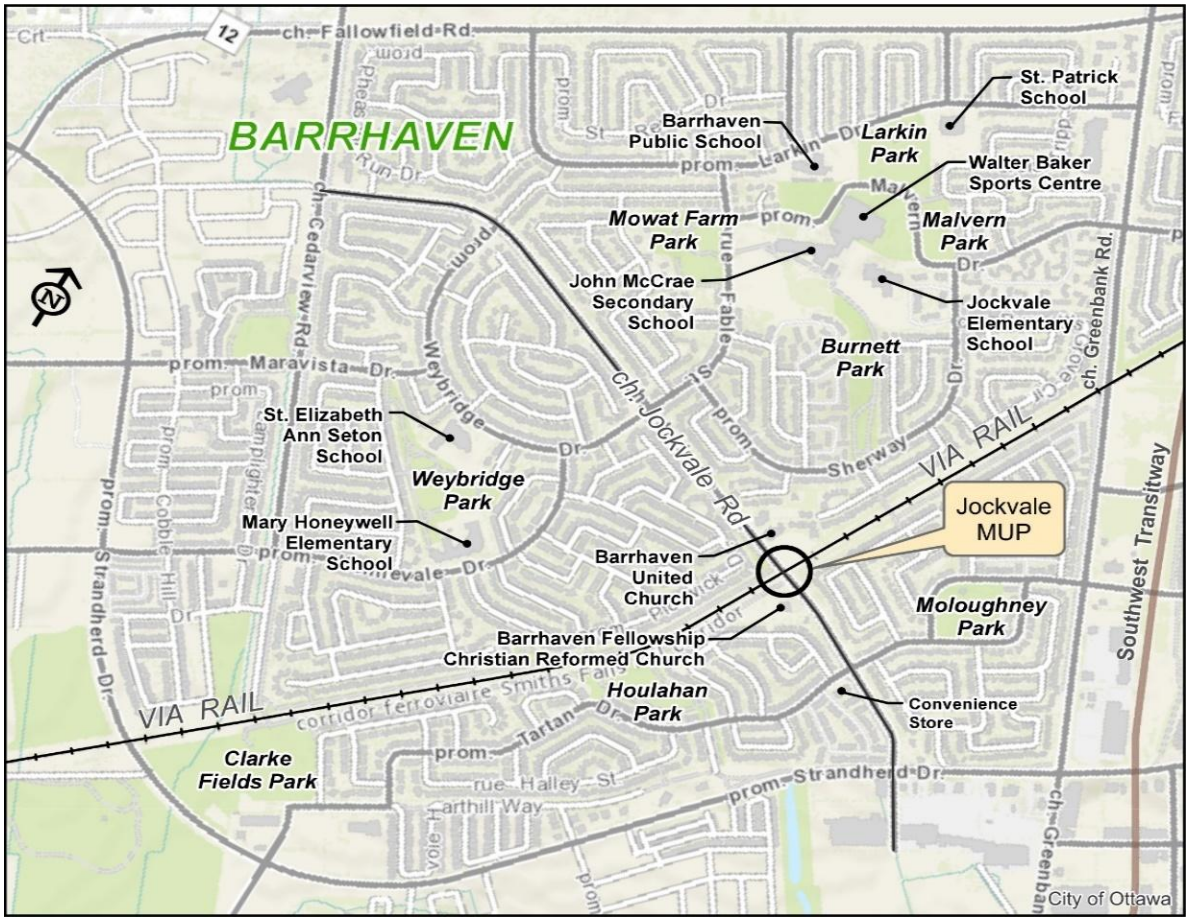

Figure 1(a): Study Area

Figure 1(b): 3-D Illustration of the Recommended Grade-Separation of the Jockvale Road MUP

Figure 1(c): 3-D Illustration of the Recommended Jockvale Road Crossing and East-West MUP Connection

West of Jockvale Road, an east-west pathway runs parallel to (north and south of) the VIA Rail corridor. Currently, there is no formal crossing for users of these pathways to cross Jockvale Road. In response to the feedback received from stakeholders, the EA study also addresses the connectivity across Jockvale Road by incorporating a mid-block crossing located approximately 100 metres south of the VIA Rail tracks. East of Jockvale Road, the MUP is further extended to connect the recommended crossing to the future easterly extension of the existing east-west pathway.

The project would also require the lowering of an approximately 60 metre section of a sanitary force main to accommodate the MUP underpass design. The force main (400 millimetres) runs parallel to VIA Rail tracks on the south side, and services an area of approximately 525 hectares.

The EA study also identifies near-term modifications to the existing at-grade MUP crossing until such time that the facility is grade-separated. Such measures include widening the MUP through the rail crossing to a standard 3 metre width, installing tactile stop bars and delineating the MUP edges through pavement markings ahead of the pedestrian gates.

The Recommended Plan and the proposed near-term modifications are shown in Document 1.

The Recommended Plan will provide an enhanced and safer environment for pedestrians, cyclists and those with mobility constraints. As well, it will improve connectivity of the local and surrounding active transportation network.

The EA study has been undertaken in accordance with Ontario's *Environmental Assessment Act,* fulfilling the requirements of the Municipal Class EA process for Schedule 'C' projects.

Assumptions and Analysis

The City's Transportation Master Plan (TMP) sets 28 per cent modal share target for pedestrian and cycling within Barrhaven for 2031, which is an increase of 12 per cent from the existing (2011) modal share estimates. The Jockvale Road MUP corridor is a

key link in Barrhaven's active transportation network and is designated as a Major Pathway in the Ottawa Pedestrian Plan (OPP) and Ottawa Cycling Plan (OCP). The existing MUP influences the north-south movement of pedestrians and cyclists traveling from West Barrhaven to South Nepean Town Centre.

This project presents an opportunity to enhance the existing MUP-rail crossing and provide a similar level of comfort and safety for its users as found at other rail grade-separated crossings in Barrhaven (Jockvale Road MUP is the last at-grade crossing in this community). It will further the City's sustainable transportation initiatives by enhancing the active transportation network and help reduce greenhouse gas emissions and air contaminants.

The Recommended Plan is developed in consideration of a future grade-separation of Jockvale Road at the rail crossing. This is to avoid or minimize throw-away costs and disruption to the future operation of the grade-separated MUP facility.

The outcome of this EA identifies the project for inclusion as part of the TMP update, which will consider its timing and priority with respect to the City's affordable transportation network.

Financial Implications

The cost to grade-separate the Jockvale Road MUP is estimated at $6.5 million (2019 dollars). Implementation cost for near-term measures is estimated at $70,000. Funding for implementation will be a matter for future budget deliberations as there is no funding for this work in the current TMP's affordable network.

Public Consultation/Input

The EA study benefitted from the feedback provided by representatives of local community associations, businesses and stakeholders (including VIA Rail and the City's Accessibility Advisory Committee). Three meetings were held, each with representatives of select government agencies and Business-Public Consultation Groups. Feedback from area residents was obtained through two open houses. Representatives of institutional sites and Barrhaven Non-Profit Housing also participated in these consultation events. Indigenous communities were also invited to participate.

Key feedback received includes: requests for connectivity to the east-west pathway, including a crossing of Jockvale Road; some supported the grade-separation of the MUP while others questioned its necessity; concern about the project cost; request to consider a pedestrian crossing at Jockvale Road north of VIA Rail tracks; and, requests for benches/rest stops along the new MUP underpass.

Comments provided by stakeholders were considered in the development of the Recommended Plan for the project.

Résumé

Le sentier polyvalent du chemin Jockvale est un important tronçon du réseau de transport actif de Barrhaven. Il longe le côté ouest du chemin Jockvale et est emprunté chaque jour par des centaines de piétons et de cyclistes qui se rendent à l'école, à leur lieu de culte ou ailleurs. Actuellement, le sentier polyvalent traverse, au niveau du sol, la voie ferrée de VIA Rail où passent en moyenne 19 trains les jours de semaine, un chiffre qui devrait augmenter à 37 d'ici 2031. L'étude sur l'aménagement de sauts-de-mouton aux passages à niveau de Barrhaven et du chemin Merivale, approuvée par le Conseil en juin 2017, mentionnait déjà la nécessité d'un saut-de-mouton à cet endroit. Le Programme de sécurité ferroviaire pour Barrhaven prévoit également l'aménagement d'un saut-de-mouton sur le chemin Jockvale, mais ce volet dépasse la portée de l'étude d'évaluation environnementale dont il est question ici.

Dans l'étude d'évaluation environnementale, on recommande d'aménager un passage inférieur sur le sentier polyvalent au croisement de la voie ferrée de VIA Rail. La figure 1(a) montre le secteur à l'étude, et les figures 1(b) et 1(c) illustrent en trois dimensions le plan recommandé. Le passage inférieur comprendrait une structure de 15 m de long offrant une hauteur libre de 3 m, où passera un sentier polyvalent de 3 m de large bordé d'un espace tampon de 0,5 m de part et d'autre. Le passage serait aménagé à environ 20 mètres à l'ouest de la ligne médiane du chemin Jockvale pour en garantir la compatibilité avec le saut-de-mouton prévu au croisement de ce chemin et de la voie ferrée. Le sentier rejoindrait graduellement le niveau du sol de chaque côté du passage inférieur.

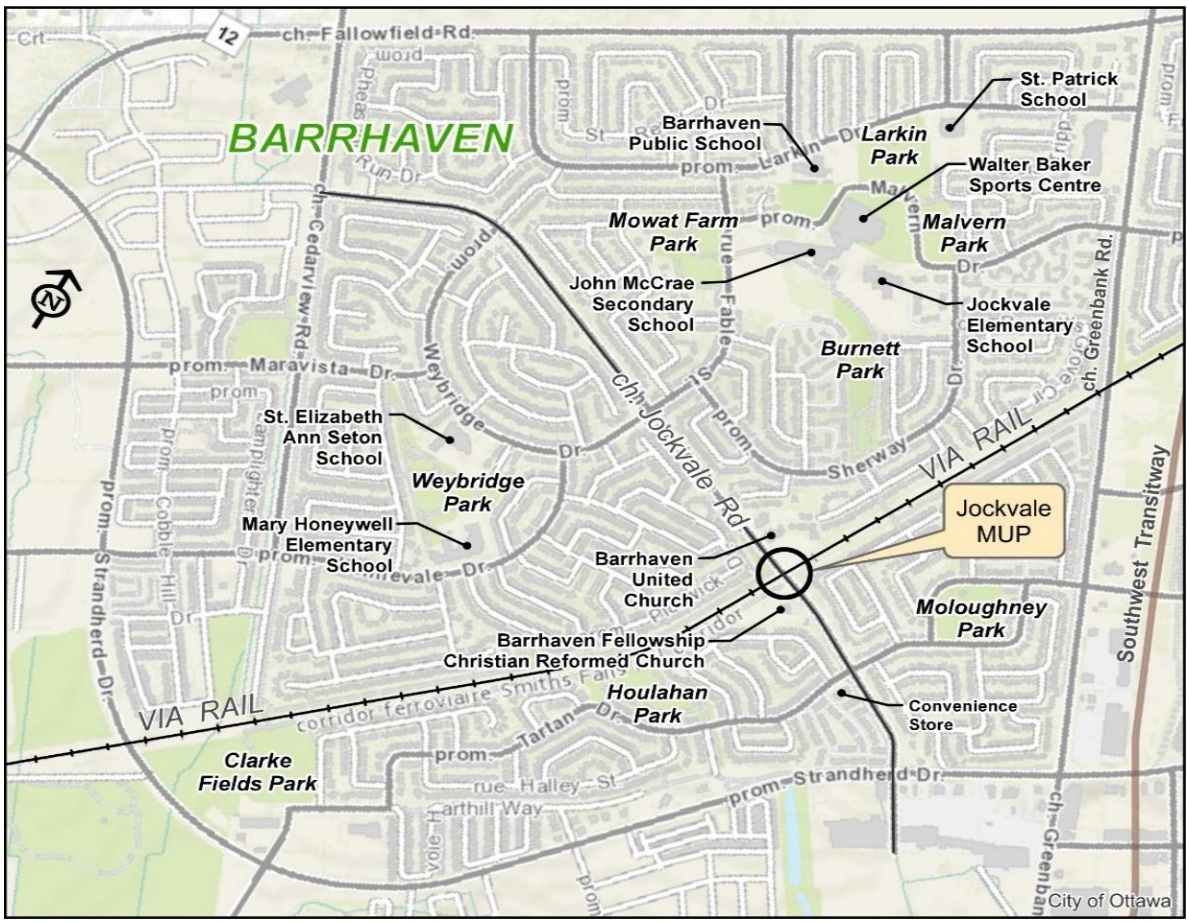

Figure 1(a) : Secteur à l'étude

Figure 1(b) : Illustration en trois dimensions du saut-de-mouton recommandé sur le sentier polyvalent du chemin Jockvale

Figure 1(c) : Illustration en trois dimensions du passage piéton du chemin Jockvale et de la connexion est-ouest du sentier polyvalent recommandés

À l'ouest du chemin Jockvale se trouve un sentier est-ouest longeant (au nord et au sud) le corridor ferroviaire de VIA Rail. Aucun passage officiel ne permet actuellement aux usagers de traverser le chemin Jockvale. En réponse aux commentaires reçus à ce sujet, on s'est penché sur la question durant l'étude d'évaluation environnementale et on recommande l'aménagement d'un passage en section courante à environ 100 mètres au sud de la voie ferrée. Une extension du sentier polyvalent à l'est du chemin Jockvale permettrait de relier le passage recommandé au futur prolongement du sentier est-ouest.

La conception prévue du passage inférieur exigerait également d'abaisser une section d'environ 60 mètres d'une conduite de refoulement d'égout sanitaire. La conduite (400 mm) longe la voie ferrée de VIA Rail du côté sud et est reliée à un secteur d'environ 525 hectares.

L'étude d'évaluation environnementale prévoit des modifications à court terme au passage à niveau actuel du sentier polyvalent, en attendant l'aménagement du saut-de-mouton. On y recommande entre autres de l'élargir pour qu'il fasse 3 mètres (largeur standard) à la hauteur du passage à niveau, d'installer une ligne d'arrêt en relief et de délimiter clairement les bordures du sentier avec des marques sur la chaussée avant les barrières pour piétons.

Le document 1 présente le plan recommandé ainsi que les modifications à court terme proposées.

Le plan recommandé offre non seulement un environnement meilleur et plus sûr pour les piétons, les cyclistes et les personnes à mobilité réduite, mais améliore aussi la connectivité du réseau de transport actif local et périphérique.

L'étude d'évaluation environnementale a été réalisée conformément à la *Loi sur les évaluations environnementales* de l'Ontario et satisfait aux exigences relatives aux projets visés par l'annexe C de l'évaluation environnementale municipale de portée générale.

Hypothèses et analyse

Le Plan directeur des transports (PDT) de la Ville fixe à 28 % sa cible de la part modale

des piétons et des cyclistes à Barrhaven pour 2031, ce qui représente une augmentation de 12 % par rapport aux estimations actuelles (datant de 2011). Le sentier polyvalent du chemin Jockvale constitue un maillon essentiel du réseau de transport actif du quartier et est désigné « grand sentier » dans le Plan de la circulation piétonnière d'Ottawa et le Plan sur le cyclisme d'Ottawa. Il influence les déplacements nord-sud des piétons et des cyclistes voyageant de Barrhaven-Ouest jusqu'au centre-ville de Nepean-Sud.

Ce projet est l'occasion d'améliorer la jonction du sentier polyvalent et de la voie ferrée, et d'offrir à ses usagers un confort et une sécurité comparable à ceux des autres sauts-de-mouton ferroviaires de Barrhaven (le sentier polyvalent du chemin Jockvale compte le dernier passage à niveau du quartier). Il permettra de faire avancer les initiatives de transport durable de la Ville en améliorant son réseau de transport actif et contribuera ainsi à réduire les émissions de gaz à effet de serre et les aérocontaminants.

Afin d'éviter ou de réduire au minimum les dépenses inutiles et les interruptions d'accès au saut-de-mouton du sentier polyvalent, le plan recommandé suppose l'aménagement du saut-de-mouton au chemin Jockvale.

À la lumière de l'évaluation environnementale, on recommande l'inclusion du projet à la mise à jour du PDT, de sorte que son échéancier et son ordre de priorité soient évalués dans le contexte du réseau de transport abordable de la Ville.

Répercussions financières

Les coûts d'aménagement d'un saut-de-mouton sur le sentier polyvalent du chemin Jockvale sont évalués à 6,5 millions de dollars (en dollars de 2019). Les coûts de mise en œuvre des mesures à court terme sont quant à elles évalués à 70 000 $. Comme aucune enveloppe n'est actuellement prévue pour ces travaux dans le cadre du réseau abordable du PDT, le financement du projet devra être abordé lors de prochaines délibérations budgétaires.

Consultations publiques et rétroactions

L'évaluation environnementale a profité de commentaires de représentants d'associations communautaires, d'entreprises et d'intervenants locaux (dont VIA Rail et le Comité consultatif sur l'accessibilité de la Ville). Trois rencontres ont été organisées, auxquelles ont participé des représentants d'organismes gouvernementaux et de

groupes de consultation des entreprises et du public. Deux séances portes ouvertes ont permis de recueillir les commentaires de résidents du secteur. Étaient aussi présents des représentants de sites institutionnels et de l'organisme de logements à but non lucratif Barrhaven Non-Profit Housing, et la participation des communautés autochtones a également été sollicitée.

Voici quelques-uns des principaux commentaires recueillis : demandes pour relier le sentier est-ouest, dont un passage sur le chemin Jockvale; commentaires en soutien à un saut-de-mouton sur le sentier polyvalent et, au contraire, réserves quant à sa pertinence; inquiétudes sur le coût du projet; demandes en faveur d'un passage pour piétons sur le chemin Jockvale, au nord de la voie ferrée de VIA Rail; demandes pour des bancs ou des aires de repos le long du nouveau passage inférieur du sentier polyvalent.

Les commentaires ont été pris en compte dans l'élaboration du plan recommandé pour le projet.

BACKGROUND

In June 2017, Council received the Barrhaven and Merivale Road Rail Grade-Separation Study that examined the feasibility of grade-separating the Southwest Transitway and four roadways (Woodroffe Avenue, Fallowfield Road, Merivale Road and Jockvale Road) where they currently cross at-grade with the VIA Rail line (Smiths Falls Subdivision).

The feasibility report recommended that all five crossings be grade-separated with a prioritization order of Woodroffe Avenue and the Southwest Transitway, Fallowfield Road, Merivale Road and Jockvale Road, based on the greatest exposure of vehicle/train traffic. The cost for all the grade-separations was estimated at approximately $430 million.

Given that the grade-separation of Jockvale Road is identified as the lowest priority, its implementation would not occur for quite some time in the future. However, the opportunity was identified to enhance the safety for the Jockvale Road MUP users in advance of the road project.

In June 2017, Council approved the establishment of Barrhaven Rail Safety Program (BRSP) with a mandate to seek funding in the 2018 Capital Budget to undertake the

environmental assessments for the rail grade-separations at:

- Woodroffe Avenue, the Southwest Transitway, and Fallowfield Road; and,
- The multi-use pathway underpass at Jockvale Road where it crosses the VIA Rail corridor.

In December 2017, the City approved the 2018 Budget, which included $3.5 million for the new BRSP. In May 2018, the City initiated the two EA studies for rail grade-separation of these transportation corridors. The Jockvale Road Multi-Use Pathway EA study is the subject of this staff report.

DISCUSSION

Study Area

The Jockvale Road MUP (Figure 2) is located within the Barrhaven West and Old Barrhaven residential neighborhood. The MUP is designated as a Major Pathway in the City's Pedestrian Plan and Cycling Plan. It runs parallel on the west side of Jockvale Road, which is a major collector roadway. Within the study area, Jockvale Road has a two-lane (one in each direction) rural cross-section with a posted speed limit of 60 km/h. Both Jockvale Road and the MUP traverse diagonally through the community and provide connection between Strandherd Drive and Cedarview Road. The VIA Rail line (Smiths Falls Subdivision) bisects the community in a south-west to north-east direction and intersects at-grade with Jockvale Road and the adjacent MUP at Mile 5.7 on the line.

Figure 2: Jockvale Road and the adjacent Multi-Use Pathway

Table 1 shows the AM and PM peak-hour weekday vehicle traffic volume on Jockvale Road where it crosses VIA Rail tracks.

Table 1: 2015 Weekday Traffic Volume on Jockvale Road at VIA Rail tracks

Direction	AM Peak (vehicles per hour)	PM Peak (vehicles per hour)
Northbound	625	549
Southbound	363	665

The MUP supports active transportation between the residential neighbourhood and nearby destinations, including religious institutions, schools, parks, a strip mall and recreation centres. It also supports the active transportation mobility between other Barrhaven neighbourhoods, including north-south movements between West Barrhaven and South Nepean Town Centre and the existing east-west MUPs that run parallel to the VIA Rail line. Bus routes # 170 and # 173 provide transit service along Jockvale Road during certain times of the day. Bus stops are located on either side of Jockvale Road approximately 175 metres north of the VIA Rail corridor.

Need and Opportunity

Today, the rail line consists of a single main track typically used by a combination of VIA Rail passenger trains and freight trains. The 2017 Feasibility Study identifies that an average of 18 passenger trains plus one freight train cross Jockvale Road per day (19 trains total per day). The level of rail traffic is expected to increase to 21 daily trains by 2021 and up to 37 trains per day by 2031 as part of VIA Rail's proposed High Frequency Rail service. VIA has indicated that the anticipated increase in rail traffic would likely require an additional track through the corridor in the future, although a timeline was not identified. Currently, the Crossing Exposure Index (CEI) is above the 200,000 threshold, which is used as an industry standard for consideration of grade-separation. By 2031, the CEI will be well beyond the threshold. Given these facts, the Feasibility Study recommended the grade-separation of the Jockvale Road corridor where it crosses the VIA Rail line, including the adjacent MUP.

Table 2 provides a summary of the CEI for Jockvale Road at the VIA Rail crossing with the preferred grade-separation solution of the roadway.

Table 2: Crossing Exposure Index (CEI) analysis and recommended solution

VIA Rail (Smiths Falls Subdivision line) crossing	Mile	Traffic Volume *AADT (vpd) 2016 2021 2031	Train Volume HFR (vpd) 2016 2021 2031	Crossing Exposure Index 2016 2021 2031	Preferred Grade-Separation Solution
Jockvale Road	5.70	11,452 12,643 15,412	19 21 37	217,588 265,503 570,244	Underpass, road under VIA Rail line

*AADT includes suggested growth rates.

Pedestrian and cycling trip counts were undertaken in September 2017 for weekday AM and PM peak periods and in July 2018 for weekend peak period. Table 3 summarizes

the results of this survey.

Table 3: Pedestrian and Cyclist Movements at Jockvale/ VIA Rail Tracks

Direction	Total (Pedestrians and Cyclists Movement)		
	Weekday AM (6:45 – 10:15)	Weekday PM (2:45 – 6:15)	Saturday (6:45 am – 10:15 am)
North	83	84	59
South	65	97	66
East [1]	12	7	20
West [1]	7	8	15
Total	**167**	**196**	**160**

1. Counts reflect pedestrian and cyclist activity along the east-west MUP south of the VIA rail line.

Elsewhere in Barrhaven, four pedestrian and bicycle crossings of the VIA Rail line have been grade-separated at Cedarview Road, Conway Street/Valiant Street, Greenbank Road and Longfields Station. A fifth crossing at Strandherd Drive will be grade-separated as part of the approved project to widen Strandherd Drive between Maravista Drive and Jockvale Road. Grade-separation of the Jockvale Road MUP would provide a similar level of comfort and safety for its users as provided at these other crossings and will help to achieve the TMP's pedestrian and cycling modal share targets within Barrhaven by 2031.

Evaluation Criteria and Methodology

The following planning and design principles were established to assist in the development of a Recommended Plan for this project, based on a combination of best-practices with respect to railway and active transportation facility crossings and local conditions:

- To eliminate the risk of a near-miss or collision involving a MUP user, or those

pedestrians and cyclists using the roadway as a more direct route, with a train at the Jockvale Road crossing location;

- To improve the universal accessibility and connectivity of the active transportation network provided by the MUP to destinations north and south of the railway line;
- To eliminate the need for ongoing maintenance and inspection of signalization/mechanical/electrical rail crossing infrastructure at the MUP crossing and to reduce or eliminate the risk of its failure;
- To be compatible with the future rail grade-separation of Jockvale Road; and,
- To have regard for all environmental aspects of the study area, including social, natural, physical, and economic aspects, including life-cycle cost.

These principles were further expanded to develop evaluation criteria and the associated indicators that would guide the evaluation process at different stages of the study.

The following methodology was established for a comparative assessment of alternatives:

- Where an alternative solution didn't achieve, or achieved very little, the intent of the criteria and indicators, the symbol "○" was assigned and considered to perform poorly for this indicator;
- Where an alternative solution partially achieved the intent of the criteria and indicators, the symbol "◑" was assigned and considered to perform neutrally or moderate for the indicator; and,
- Where an alternative solution almost met or fully met the intent of the criteria and indicators, the symbol "●" was assigned and considered to perform best for the indicator.

Alternative Solutions

The EA study developed four potential alternative solutions to address the project's need and opportunities, as described below:

- Alternative Solution # 1 - Do nothing: This option comprises regular planned maintenance for the existing infrastructure in the study area. No modifications or enhancements to the existing infrastructure network would be made. Scheduled maintenance activities would continue.

  Although the 'do nothing' alternative does not address the project's need and opportunities, it was included to provide a baseline comparison for evaluation of other alternative solutions.

- Alternative Solution # 2 - Close the MUP at this location: The MUP crossing at Jockvale Road and the VIA Rail line would be closed until such time the Jockvale Road is grade-separated, and MUP users redirected to an existing and alternative grade-separated crossing.

- Alternative Solution # 3 - Enhance the existing at-grade MUP crossing: The existing at-grade MUP crossing would remain but with infrastructure improvements reflective of current best practices. This includes upgrades to the railway gates, signalization, flashing lights, warning bells, pathway markings, tactile stop bars and sight-lines, amongst others.

- Alternative Solution # 4 - Grade-separation: A grade-separation of active transportation modes would be implemented, either as an underpass or overpass.

Alternative 4 ("grade-separation") best meets the project's need and opportunities as well as the planning and design principles. This option removes conflicts at the crossing and improves the barrier-free environment, universal accessibility and the overall connectivity of the active transportation network. Further, it also eliminates concerns associated with maintenance, inspection and failure of the MUP rail-crossing signalization infrastructure. While the option is the most expensive when considering construction costs, it can be designed to minimize physical and infrastructure constraints, and throw-away costs, when the grade-separation of Jockvale Road is implemented in the future.

The evaluation results are summarized in Table 4.

Table 4: Evaluation of Alternative Solutions

Criteria \ Alternative Solutions	1. Do Nothing	2. Close the MUP at this location	3. Enhance the existing at-grade MUP crossing	4. Grade-separation
Eliminates conflict at the crossing.	○	●	◑	●
Eliminates potential conflict with nearby private accesses to Jockvale Road.	●	●	●	◑
Improves accessibility across the rail line.	○	○	◑	●
Improves the connectivity of the active transportation network at this location.	○	○	●	●
Improves the connectivity of the active transportation network to the north and south of the rail line.	○	○	◑	●
Eliminates the need for ongoing and future maintenance and inspection of MUP signalization rail crossing infrastructure.	○	●	○	●
Eliminates the risk of future MUP signalization/mechanical/electrical rail line infrastructure failure.	○	●	○	●
Compatibility with the future grade-separation of Jockvale Road at this location.	●	◑	●	●
Addresses local social environmental factors, including: land use, noise, air quality and vibration, cultural and archeological features, and the visual environment.	○	○	●	◑
Addresses local natural environmental factors, including: the effects of the project on climate change, terrestrial and aquatic habitats and ecological corridors.	○	○		◑

Criteria \ Alternative Solutions	1. Do Nothing	2. Close the MUP at this location	3. Enhance the existing at-grade MUP crossing	4. Grade-separation
Addresses local physical environmental factors, including: the effects of climate change on the project, geotechnical and hydrogeological factors.	○	○	●	○
Addresses local economic factors, including: construction cost and life-cycle costs.	◑	●	◑	○

Legend ● Performs best

◑ Performs moderately

○ Performs poorly

It is noteworthy that Alternative 3 (“enhance the existing at-grade MUP crossing”) performed moderately in the evaluation. While it scores better in some areas, it does not fully resolve the potential for conflicts at the crossing, which is an important factor considering the future rail volume along this corridor.

Key considerations that guided the development and evaluation of alternative solutions are described in Section 1 of Document 2.

Grade-Separation Alternatives

Given that the grade-separation option performs best, the following two alternatives for grade-separation were investigated:

- Overpass: the MUP would cross over the VIA Rail tracks.
- Underpass: the MUP would cross under the VIA Rail tracks.

The evaluation results of overpass versus underpass options are summarized in Table 5.

Table 5: Evaluation of Grade-Separation Alternatives

Criteria \ Grade-Separation Options	Overpass	Underpass
Barrier-free accessibility	◑	●
Overall project footprint	○	●
Visual and access impacts to surrounding properties	○	●
Connectivity with the adjoining pathway network	○	●
Constructability of the grade-separated option	◑	◑
Long-term railway track maintainability	●	◑
Compatibility with VIA Rail Future Expansion Plans	◑	●

Legend ● Performs best
◑ Performs moderately
○ Performs poorly

The underpass option provides many benefits such as a smaller project footprint, a better user experience due to shorter and more direct connecting ramps to both the grade-separated crossing (at VIA Rail) as well as to adjoining pathways and a barrier-free environment. It is also significantly less visually intrusive and can accommodate the proposed access to abutting church site. Finally, lower project construction and

maintenance costs are also expected for this alternative making it overall the preferred option to address the needs of the project. Although groundwater is a concern for construction in parts of Barrhaven, at this location, the groundwater can be managed for an excavation depth of approximately 4 to 4.5 metres. The proposed grade-separation is within this range.

Key considerations that guided the development and evaluation of grade-separation alternatives are described in Section 2 of Document 2.

Alternative Design Considerations

Due to the challenging nature of on-site constraints and issues, development of alternative designs required special considerations. These include:

- Construction Work Block Limitations: VIA Rail's train schedule is a key consideration in evaluating the alternative designs because it limits the opportunities and methods for constructing the project. VIA Rail staff advised that construction activities can only be undertaken when trains are not operating. This would only allow for overnight work blocks of approximately 10 hours during weekends and seven hours during weekdays. During the day, short work blocks (approximately 45 minutes (train schedule frequency)) would be insufficient to undertake any substantial work. The work blocks are further shortened considering that daily construction activities must include time for site inspection, construction staging, unexpected weather considerations, track commissioning and ensuring that the tracks are clear for safe train operation. Evaluation of alternative designs for the project are, therefore, limited to those conforming to the work block limitations.

- Underpass Structure Type and Constructability: This project also required a thorough assessment of the underpass structure types given the availability of a limited construction window. It included consideration of several factors such as constructability, compatibility with VIA Rail's future plans to double the tracks; risks to delay VIA Rail's operations; construction cost; maintenance; inspection; accessibility; perception of safety and user experience; and, geotechnical and ground-water considerations.

- Future Grade-Separation of Jockvale Road: The EA study also required an understanding of how grade-separation of the MUP would fit into the longer-term

plan for the grade-separation of Jockvale Road. Ideally, the MUP grade-separation could be constructed such that there is minimal or no physical conflicts when the Jockvale Road grade-separation is later implemented. This would allow the MUP to remain operational during construction and after implementation of Jockvale Road grade-separation.

- Existing East-West MUPs Connectivity: The Barrhaven community benefits from the pathway networks in the study area. While the existing east-west MUPs (running parallel to the VIA Rail corridor, west of Jockvale Road) provide a convenient route for cyclists and pedestrians, it does not have connectivity to the pathway segments east of Jockvale Road nor a proper crossing at Jockvale Road. The Ottawa Cycling Plan includes plans for a continuous east-west pathway between Cedarview Road to the west and Greenbank Road to the east of Jockvale Road.

- Sanitary Force Main Lowering: Within the study area, an existing sanitary force main runs along the south side of the VIA Rail corridor from the Tartan pumping station, turning north approximately 340 metres east of Jockvale Road (Figure 3). The force main is located at a depth that would conflict with the proposed vertical profile of the MUP underpass.

Figure 3: Sanitary Force Main

Recommended Plan

The Recommended Plan is a MUP underpass located approximately 20 metres west of the Jockvale Road centerline. This plan ensures compatibility with the future grade-separation of Jockvale Road where it crosses the VIA Rail tracks (Figure 4). The pathway would gently rise back to grade-level on either side of the underpass. A steel beam guiderail would be required alongside Jockvale Road, near the slopes, for safety considerations.

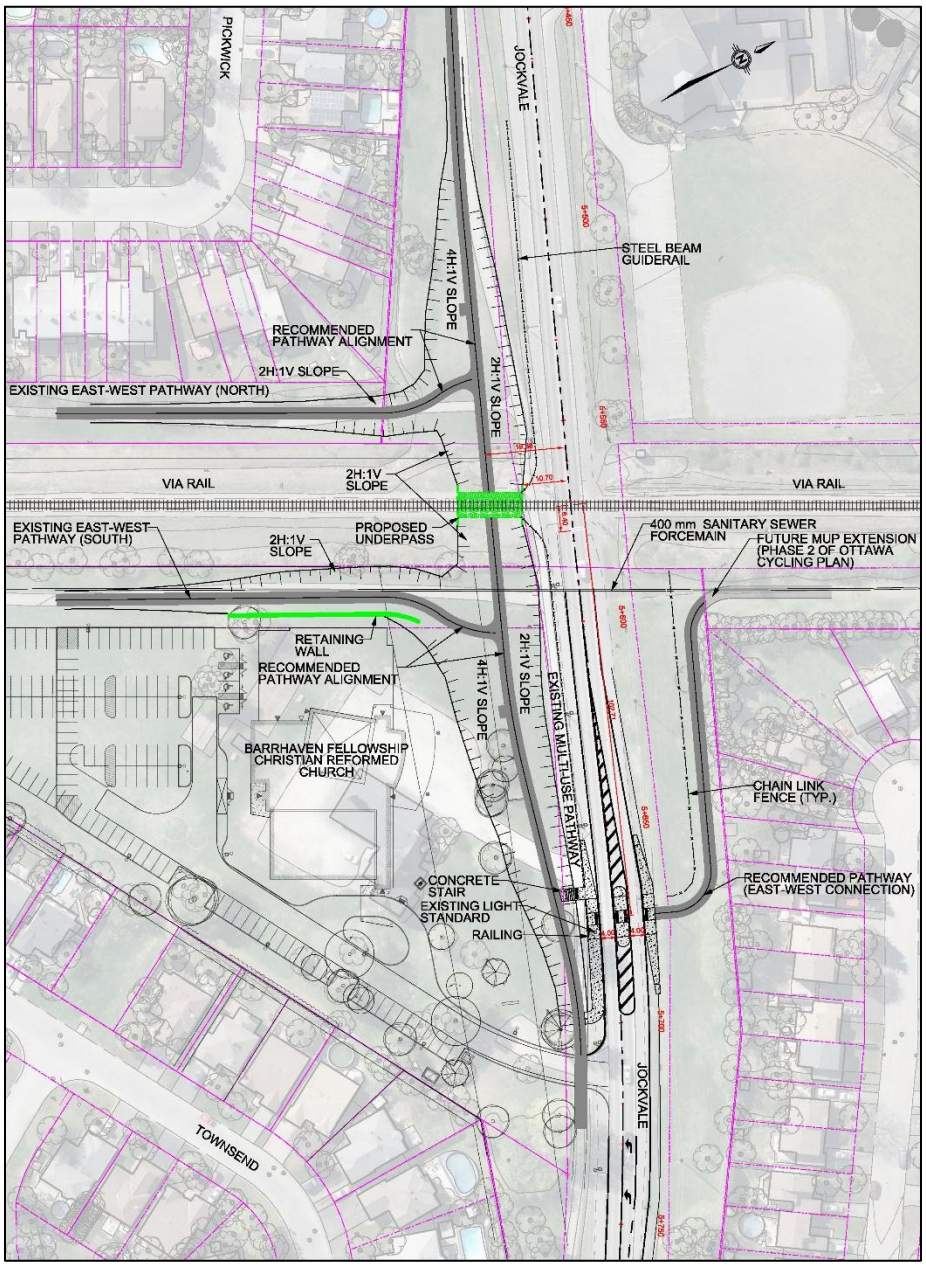

Figure 4: Recommended Plan

The recommended underpass is a 15-metre span steel through plate girder (TPG) bridge with a ballasted deck and trainman walkways with open railings on either side. The bridge substructure would consist of abutments comprising of concrete caissons installed down to bedrock located on either side outside of the railway track with concrete cap beams functioning as the bearing seats. Concrete ballast walls will also be provided. Concrete slope paving (2:1 slope) would be located below the bridge in front of each abutment. The bridge provides a minimum 3 metre vertical clearance over a 3-metre wide MUP that has an additional 0.5 metre buffer on each side. Figure 5 shows an illustration of the underpass structure cross-section.

The TPG design is preferred over a culvert option as it provides the opportunity to integrate with the future twinning of the VIA Rail line; it meets Crime Prevention Through Environmental Design (CPTED) guidelines to discourage anti-social activities; and, it has a lesser excavation requirement, which is favourable from a cost and geotechnical perspective given the sensitive subsurface conditions and shallow groundwater table.

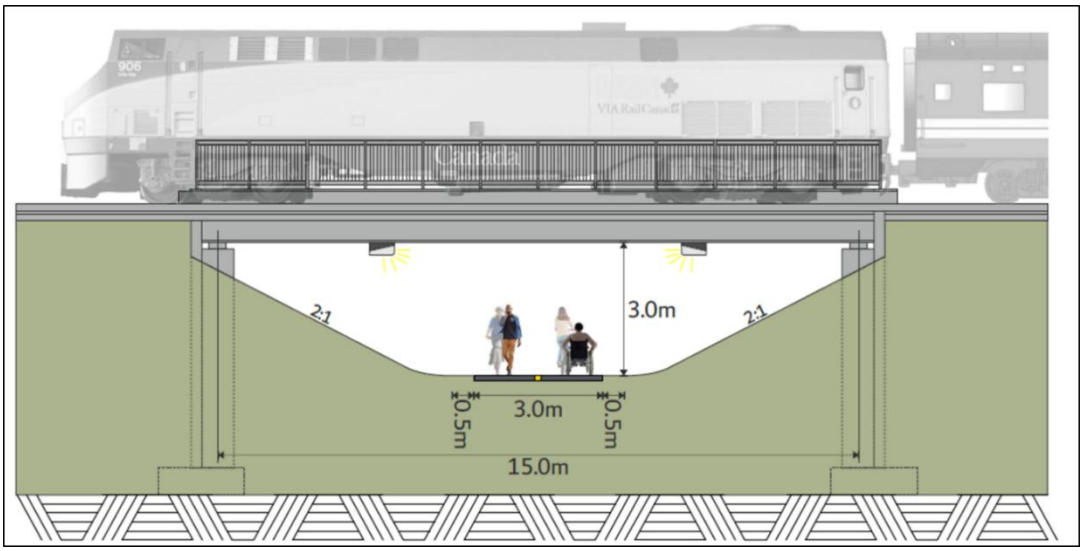

Figure 5: Recommended Underpass Structure Cross-Section

Key considerations that guided the development and evaluation of alternative underpass structure types are described in Section 3 of Document 2.

<u>Crossing of Jockvale Road and Existing East-West MUPs:</u>

The Recommended Plan also addresses connectivity across Jockvale Road by

incorporating a mid-block crossing approximately 100 metres south of the VIA Rail tracks (Figure 6).

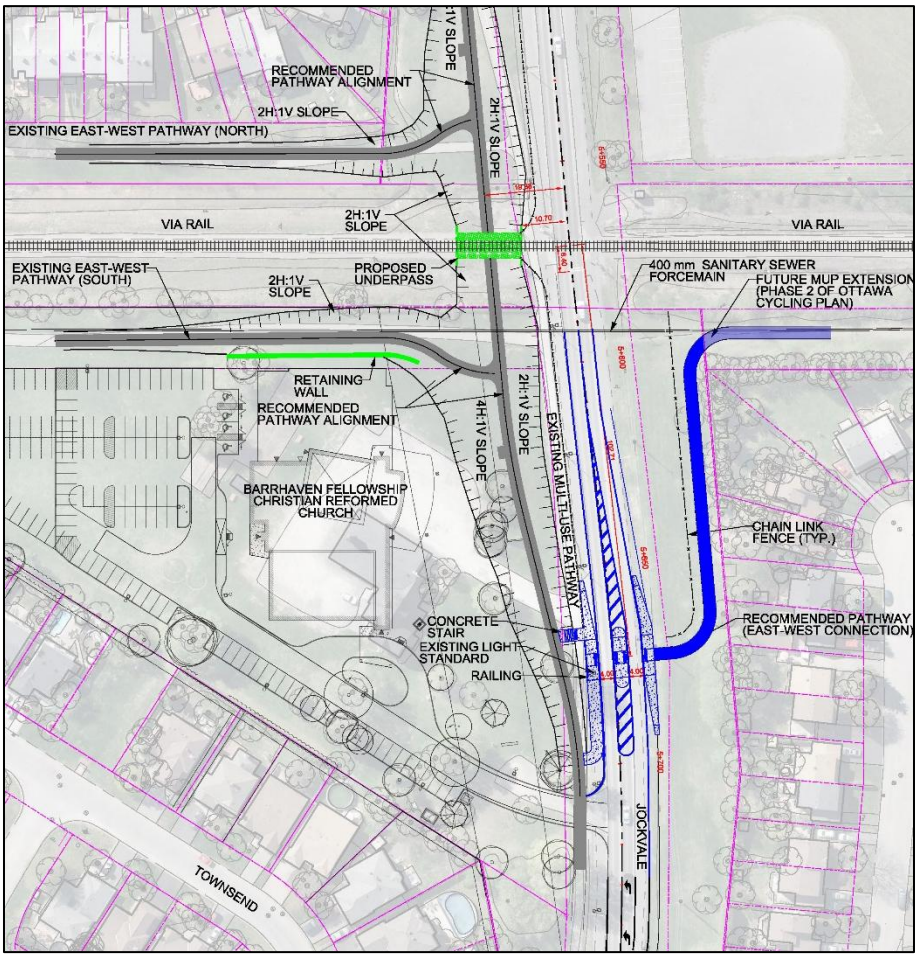

Figure 6: Recommended Plan for East-West MUP Connectivity

The analysis undertaken for this mid-block crossing does not identify any safety concerns to vehicular traffic along Jockvale Road in relation to the VIA Rail operation. The crossing includes new curbs, sidewalks, a raised median and tactile walking surface indicators to help users to safely cross Jockvale Road. East of Jockvale Road, the MUP is extended to connect the recommended crossing to the future easterly extension of the east-west pathway. A chain-link fence on the east side of Jockvale Road is recommended to guide users to stay within the designated area.

The existing east-west pathways (located west of Jockvale Road and north and south of the railway line) are also recommended to be slightly realigned as shown in Figure 6. The east-west pathway to the south side of the railway corridor will require a 50-metre

long retaining wall (height varies between 0.8 to 2.8 metres) to support the realignment. The curved connections will provide enhanced visibility and better sight-lines for users. The recommended plan includes landscaping along the sloped edge of the MUP alignment.

The recommended modifications will improve connectivity between the north-south and east-west pathways and ensure a barrier-free access to all users.

The design is compliant with the *Accessibility for Ontarians with Disabilities Act* and accessibility guidelines for the City of Ottawa (2015).

The alternatives considered for an east-west MUP connection across Jockvale Road and key considerations that guided the evaluation of these alternatives are described in Section 4 of Document 2.

Drainage and Stormwater Management:

The Recommended Plan includes stormwater management infrastructure that incorporates maintenance holes and catch basins, an underground storage chamber at each end of the underpass structure, underground pumping station to control discharge and a new 200-millimetre diameter stormwater pipe connection from the pumping station to the existing storm sewer located to the north along Pickwick Road.

The stormwater management infrastructure has been designed to minimize flooding and ponding of the underpass under large storm events (100-year) and climate change stress test (the 100-year event plus 20 per cent). No stormwater ponding is anticipated during the 100-year storm event.

Sanitary Force Main Lowering:

The Recommended Plan requires the lowering of an approximately 60-metre long section of a sanitary force main to accommodate the MUP underpass design (Figure 7). The force main is on the south side and runs parallel to the VIA corridor. The design was developed in consultation with Public Works & Environment Services (PWES) staff and includes two new 400-millimetre pipes. The second pipe is provided in anticipation of a future twinning of the facility for redundancy purpose, as a long-term project. The design minimizes air pressure and system back-up and includes an air release chamber fitted with carbon filters to eliminate odors. Both pipes are located at a depth deemed adequate to accommodate the potential future grade-separation (underpass option) of

Jockvale Road. It will also help minimize throwaway costs and disruption to MUP operation.

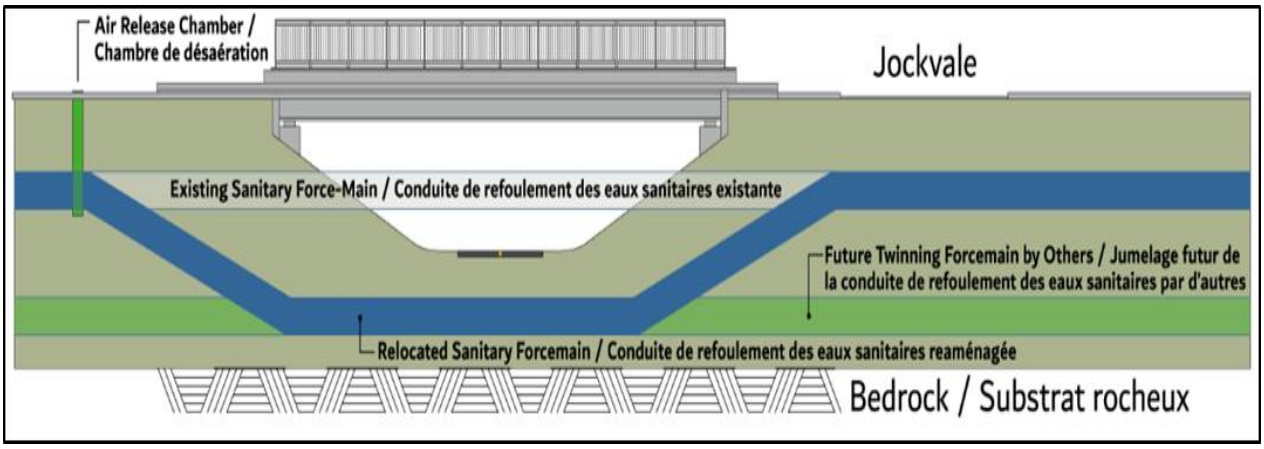

Figure 7: Proposed Sanitary Force Main Lowering

Landscaping Approach:

The proposed grade-separation of the MUP incorporates a landscaping plan that will positively contribute to the environment and to the user experience. Its main elements include a context-sensitive fencing and retaining wall, a rest area with a bench and dedicated space for a wheelchair, and trees to provide shade. Tree planting near the Fellowship Christian Reformed Church site will be compatible with its redevelopment plans.

Near-Term Modifications:

Modifications to the existing at-grade MUP crossing are also recommended until such time the facility is grade-separated. Measures include widening the MUP through the crossing to a standard 3 metre width, installing tactile stop bars and delineating the MUP edges through pavement markings ahead of the pedestrian gates.

The Recommended Plan and the near-term modifications are shown in Document 1.

Property Implications:

The Recommended Plan affects the property of the Barrhaven Fellowship Christian Reformed Church, located at south-west corner of Jockvale Road and the VIA Rail line. Property is needed to provide a connection between the north-south and east-west pathways and for the underpass embankment. Representatives of the Church have

participated in consultation meetings and are aware of the project implications. Consultation and coordination will continue in the detail design phase of this project.

Project Cost:

The functional design's cost estimate to grade-separate the Jockvale Road MUP is $6.5 million. Implementation of near-term measures is estimated to be $70,000. Funding for implementation of grade-separation and the near-term modifications will be subject to future budget deliberations as there is no funding for this project in the current affordable plan.

The project estimates (in 2019 dollars) represent a Class C estimate, prepared in accordance with the City's Project Delivery Review and Cost Estimating Process. The estimates include detail design, construction, project management, as well as contingency. These costs will be refined at the detailed design stage.

Other Opportunities

- Implementation of the east-west MUP crossing of Jockvale Road to improve connectivity of the MUP network in the study area could be undertaken early or coordinated with this project. Funding will need to be identified in a future budget.
- PWES has indicated a desire to twin the existing underground force main that runs parallel to VIA Rail corridor on the south side. The Ottawa 20/20 Infrastructure Master Plan identified the need for reliability in the form of dual force main configurations in order to have the ability to provide service in the event of system component failure. There is an opportunity to combine the two projects for economies of scale. Funding for the twinning of the force main will be identified separately in a future PWES budget.

RURAL IMPLICATIONS

This project does not have an impact on the rural area of the city.

CONSULTATION

The project benefitted from the review and feedback of the Agency Consultation Group (ACG) consisting of representatives from select government agencies, and City departments and approval bodies. A combined Business and Public Consultation Group (B&PCG) was also formed to obtain feedback from representatives of Community

Associations; BIA; School Boards; institutions such as Barrhaven Fellowship Christian Reformed Church, Barrhaven United Church, Barrhaven Non-Profit Housing Inc.; the Accessibility Advisory Committee (AAC); and, special interest groups. Indigenous Communities were also invited to participate in the study. A website (www.ottawa.ca/JockvaleMUP) was established to share project-related information with study stakeholders.

Various consultation meetings were undertaken at key stages of the project. Details as below:

- Two Public Open Houses (11 February 2019 and 6 May 2019) were scheduled to share study progress with residents and seek feedback. Notification of each Open House was advertised twice in local newspapers (English and French) and posted on the project web site (www.ottawa.ca/JockvaleMUP). A copy of each newspaper advertisement was sent to the office of the ward Councillor for onward distribution, and to individuals on the project's mailing list.
- Three meetings were scheduled with each Consultation Group.
- The City's Accessibility Advisory Committee participated in the B&PCG meetings.
- Representatives of institutions such as Barrhaven Fellowship Christian Reformed Church, Barrhaven United Church and Barrhaven Non-Profit Housing also provided feedback for the project.
- Consultation with VIA Rail occurred through ACG and specially arranged meetings.

Major comments received include: Support for connectivity to the east-west pathway including crossing of Jockvale Road; some residents supported the grade-separation of the MUP while others expressed that this project is not necessary; request to consider a new north-south connection from the Pickwick Drive/Wheeler Street through to the Houlahan Park; provision of benches/rest stops along the new MUP underpass; and, a request to consider a pedestrian crossing at Jockvale Road north of VIA tracks.

Comments provided by study stakeholders were considered in the development of the Recommended Plan for the project.

Currently, the City's Pedestrian Plan and Cycling Plan do not identify a requirement for

a new north-south rail grade-separated connection between the Pickwick Drive / Wheeler Street and the Houlahan Park. The link is beyond the scope of this project; however, the request will be reviewed as part of the update of the master plans. Regarding the comment to consider a pedestrian crossing at Jockvale Road north of VIA Rail tracks (in front of the Barrhaven United Church), Traffic Management Branch is currently investigating this matter and will respond to the community representative.

COMMENTS BY THE WARD COUNCILLOR(S)

I am disapppointed there is no funding for this recommended MUP underpass. I think a "safety" measurement should be added to our consideration of projects at budget. Indeed, with 19 vehicles a day, and by vehicles I mean trains, this "at grade" crossing is concerning to me and it has been for a number of years. I would say that this is Barrhaven's #1 pedestrian crossing within the community. You will read that the goal is to increase Barrhaven's pedestrian and cycling within Barrhaven in the TMP to a 28 per cent modal share which is an increase of 12 per cent from the last TMP target.

I am pleased the study has been completed but I think it is unfortunate that the cost factor for this design may further delay construction. You will note that the plan to accommodate a future vehicle grade separation includes much work which is expensive and drives the cost. In fact, it is highly unlikely, in my opinion, that the vehicle crossing will be updated in the next 20 years (minimum) given priorities we have across the City and yet you will read the City's priorities and VIA's plans to grow the service exponentially in sooner than 20 years and build high speed/high frequency train travel along this very track.

I would have preferred an option to build a MUP as we have elsewhere along the Barrhaven VIA corridor. It would provide safer satisfactory pedestrian/cycling access far sooner as it would be "affordable" for all those going to school, church, shopping, the Walter Baker Centre or those just out for a nice walk or cycle.

ADVISORY COMMITTEE(S) COMMENTS

This section contains any comments or recommendations made by one or more Advisory Committees relating to this report.

Comments received from the Accessibility Advisory Committee (AAC) representative include: need for a Jockvale Road crossing design that is supportive of users with mobility constraints; provision of benches/rest stops; separate facilities for cyclists and

pedestrians. This feedback was considered in the development of the Recommended Plan. The MUP is sufficiently wide (3 metres) to accommodate both cyclists and pedestrians

LEGAL IMPLICATIONS

There are no legal impediments to approving the recommendations as outlined in this report.

RISK MANAGEMENT IMPLICATIONS

There is no risk involved in the approval of this report.

ASSET MANAGEMENT IMPLICATIONS

The recommendations documented in this report are consistent with the City's Comprehensive Asset Management (CAM) Program (City of Ottawa Comprehensive Asset Management Plan) objectives.

This project will provide a better and safer facility for pedestrians and cyclists. Undertaking the recommend studies and environmental assessment will provide the necessary information for the City to fulfill its obligation to deliver quality services to the community in a way that balances service levels, risk and affordability. This project will provide a better and safer facility for pedestrians and cyclists, it will encourage active mode of transportation along the corridor and hence will result in improved environmental quality for the corridor.

FINANCIAL IMPLICATIONS

There are no financial implications with the approval of the recommendations in this report. Implementation of these works would be considered in future budget deliberations.

ACCESSIBILITY IMPACTS

The Recommended Plan for this project is established in consultation with the representative of the City's Accessibility Advisory Committee and conforms to the requirements of the *Accessibility for Ontarians with Disability Act* and City of Ottawa Accessibility Design Standards. When implemented, the underpass will provide a safer and an environmentally friendly facility to users of all ages and those with mobility

constraints.

ENVIRONMENTAL IMPLICATIONS

The EA study analyzed the project's effects on the natural, physical, and social environments and has developed appropriate mitigation measures which conform to City, Provincial, and Federal environmental policies, standards, regulations, and legislation.

In general, the environmental impacts have been minimized with the reduced footprint for the project. Mitigation measures are included to address impacts related to stormwater management. The study also identifies future approvals from the regulating agencies and all levels of governments to implement the project.

As the project will provide a better and safer facility to pedestrians and cyclists, it will encourage active mode of transportation along the corridor and hence will result in improved environmental quality for the corridor.

TECHNOLOGY IMPLICATIONS

This project does not have technology implications.

TERM OF COUNCIL PRIORITIES

The 2018-2022 Term of Council Priorities have not yet been approved by Council.

SUPPORTING DOCUMENTATION *(Held on file with the City Clerk)*

Document 1 Functional Design drawings of the Recommended Plan

Document 2 Evaluation Criteria and Alternative Designs

DISPOSITION

Following Transportation Committee and Council approval of the Recommended Plan, the Transportation Services Department will finalize the Environmental Study Report (ESR) and make it available for the 30-day public review period in accordance with the Municipal Class Environmental Assessment Process (Schedule C).