Alternative Designs Evaluation Summary

Traffic Capacity, Operations and Safety: How might the alternative serve the expected vehicular, transit, pedestrian and cycling traffic in terms of travel delay, safety and emergency access?

Design Alternative 1 Do Nothing – Retain Roadway Cross-Section in its Current Configuration	Design Alternative 2 On Road Buffered Bike Lane	Design Alternative 3 Separated Bike Lane with Enhanced Sidewalk	Design Alternative 3a Separated Bike Lane with Physical barrier
• Does not satisfy the Region's Transportation Master Plan with respect to vehicular, pedestrian, or cycling facilities. • Does not provide adequate capacity for vehicular traffic. • Does not improve conditions for Emergency Services, Heavy Trucks, and Transit Vehicles. • Does not provide improved conditions for cyclists or pedestrians.	• Addresses the Region's Transportation Master Plan with respect to vehicular, pedestrian, and cycling facilities. • Addition of on road buffered bike lanes will keep cyclists and motorists separated. • Reconstruction of roadway to address pavement condition, and safety of cyclists by providing on-road cycle lanes. • Roadside is shared with cyclists and transit stops introducing a potential conflict between cyclist and transit vehicles. • On Road cycling added between King Street and Weber Street. Potential for conflicts between cyclist and vehicles. • Enhanced 2.1 metre wide sidewalk to be constructed on north side and south side of University Avenue right-of-way where possible. • Emergency response times will remain the same, as no changes to the current configuration will be made. • No change in current operation and maintenance services.	• Addresses the Region's Transportation Master Plan with respect to vehicular, pedestrian, and cycling facilities. • Separated bike lanes will allow cyclists to remain off road, decrease visibility issues between vehicular traffic and cyclists at intersections. • Addition of centre turning lane allows for easier turning into adjacent properties and will allow for more efficient traffic operations. Additional signal timing optimization will further improve intersection operations. • Separated cycling facility is provided where the cycling facility is separated from vehicular traffic by flexible bollards. Reducing potential conflicts between cyclists and vehicles but increasing potential conflict between cyclist and transit vehicles with a shared roadside. • Enhanced 2.1 metre wide sidewalk to be constructed on north side and south side of University Avenue right-of-way where possible. • Emergency response times will improve due to additional two way left turn lane and related reductions in conflict, delays and congestion. • Additional snow clearing methods will need to be used for the separated bike lane and will require several passes of snow clearing equipment.	• Addresses the Region's Transportation Master Plan with respect to vehicular, pedestrian, and cycling facilities. • Physical grade separation of bike lanes maintains safety of cyclist, and good visibility for vehicular traffic. Vehicular traffic is not affected • Addition of centre turning lane allows for easier turning into adjacent properties and will allow for more efficient traffic operations. Additional signal timing optimization will further improve intersection operations. • Addresses Transit concerns regarding on road conflicts at stop locations reducing potential conflicts between cyclist and transit users . • Separated cycling facility is provided, where the cycling facility is separated from vehicular traffic by full height concrete curb and gutter. This further reduces potential conflicts between cyclists and vehicles. • Enhanced 2.1 metre wide sidewalk to be constructed on north side and south side of University Avenue right-of-way where possible. • Emergency response times will improve due to additional two way left turn lane and related reductions in conflict, delays and congestion. • No change in current operation and maintenance services. Opportunities for efficient methods of snow clearing for both sidewalk and bike lane.
POOR	FAIR	GOOD	VERY GOOD

Region of Waterloo

IBI

Alternative Designs Evaluation Summary

Natural Environment: How might the alternative affect existing trees, vegetation and wildlife?

Design Alternative 1 Do Nothing – Retain Roadway Cross-Section in its Current Configuration	Design Alternative 2 On Road Buffered Bike Lane	Design Alternative 3 Separated Bike Lane with Enhanced Sidewalk	Design Alternative 3a Separated Bike Lane with Physical barrier
• There are no existing watercourses, culvert crossings or bridges requiring widening or replacement within the study area. Impact on fisheries is not anticipated. • No impacts to significant woodland areas or vegetation communities. Vegetation removal is limited to cultural woodland or cultural thicket communities and landscape trees. • Weber Street at University Ave is within the GRCA floodplain limit, a fill alteration permit will be required during construction. • Hydrogeological impacts are similar for all alternatives and can be mitigated. • No significant existing landscape trees on existing road allowance. • Trees that need to be removed can be replaced during construction, with enhanced plantings. • SAR would not be affected with this alternative • There are no known environmentally impacted lands affected this alternative. No contaminated properties have been identified in the City's past studies.	• There are no existing watercourses, culvert crossings or bridges requiring widening or replacement within the study area. Impact on fisheries is not anticipated. • No impacts to significant woodland areas or vegetation communities. • Weber Street at University Ave is within the GRCA floodplain limit, a fill alteration permit will be required during construction. • Hydrogeological impacts are similar for all alternatives and can be mitigated. • No significant existing landscape trees on existing road allowance. Trees that need to be removed can be replaced during construction, with enhanced plantings. • This alternative does not directly impact any of the trees having potential suitable roost habitat features for SAR bats, trees identified in the study are outside of the public right-of-way. • There are no known environmentally impacted lands affected this alternative. No contaminated properties have been identified in the City's past studies. • Opportunities to be evaluated for improved stormwater management, like implementation of oil/grit separators or other Low Impact Development (LID) measures.	• There are no existing watercourses, culvert crossings or bridges requiring widening or replacement within the study area. Impact on fisheries is not anticipated. • No impacts to significant woodland areas or vegetation communities. • Weber Street at University Ave is within the GRCA floodplain limit, a fill alteration permit will be required during construction. • Hydrogeological impacts are similar for all alternatives and can be mitigated. • No significant existing landscape trees on existing road allowance. Trees that need to be removed can be replaced during construction, with enhanced plantings. • This alternative does not directly impact any of the trees having potential suitable roost habitat features for SAR bats, trees identified in the study are outside of the public right-of-way. • There are no known environmentally impacted lands affected this alternative. No contaminated properties have been identified in the City's past studies. • Opportunities to be evaluated for improved stormwater management, like implementation of oil/grit separators or other Low Impact Development (LID) measures.	• There are no existing watercourses, culvert crossings or bridges requiring widening or replacement within the study area. Impact on fisheries is not anticipated. • No impacts to significant woodland areas or vegetation communities. • Weber Street at University Ave is within the GRCA floodplain limit, a fill alteration permit will be required during construction. • Hydrogeological impacts are similar for all alternatives and can be mitigated. • No significant existing landscape trees on existing road allowance. Trees that need to be removed can be replaced during construction, with enhanced plantings. • This alternative does not directly impact any of the trees having potential suitable roost habitat features for SAR bats, trees identified in the study are outside of the public right-of-way. • There are no known environmentally impacted lands affected this alternative. No contaminated properties have been identified in the City's past studies. • Opportunities to be evaluated for improved stormwater management, like implementation of oil/grit separators or other Low Impact Development (LID) measures.
VERY GOOD	GOOD	GOOD	GOOD

Region of Waterloo

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Alternative Designs Evaluation Summary

Social Environment: How might the alternative affect the residential and commercial properties abutting the road (driveways, access, property impacts, noise, air quality, streetscaping / beautification potential and archaeological / heritage resources)?

Design Alternative 1 Do Nothing – Retain Roadway Cross-Section in its Current Configuration	Design Alternative 2 On Road Buffered Bike Lane	Design Alternative 3 Separated Bike Lane with Enhanced Sidewalk	Design Alternative 3a Separated Bike Lane with Physical barrier
• No anticipated archaeological or cultural heritage impacts • No change to business visibility, no access improvements • No new opportunities for streetscaping adjacent to designated road allowance including plantings, decorative paving materials, decorative streetlights, etc. • No change to air quality and noise.	• No anticipated archaeological or cultural heritage impacts • Relieves traffic congestion facilitating better access to businesses and adjacent neighbourhoods. • Less traffic congestion leads to better relative air quality. • Business visibility and access improvements with additional Active Transportation. • Limited opportunities for streetscaping adjacent to designated road allowance • Some additional property is required to accommodate sidewalk encroachments at intersections along the corridor. • Noise levels may increase due to projected traffic volumes.	• No anticipated archaeological or cultural heritage impacts • Relieves traffic congestion facilitating better access to businesses and adjacent neighbourhoods. • Less traffic congestion leads to better relative air quality. • Business visibility and access improvements with additional Active Transportation and enhanced sidewalks • Limited opportunities for streetscaping adjacent to designated road allowance including plantings, decorative paving materials, decorative streetlights, etc. • Some property acquisition is required to accommodate wider sidewalks along the corridor and encroachments at intersections • Noise levels may increase due to projected traffic volumes.	• No anticipated archaeological or cultural heritage impacts • Relieves traffic congestion facilitating better access to businesses and adjacent neighbourhoods. • Less traffic congestion leads to better relative air quality. • Business visibility and access improvements with additional Active Transportation and enhanced sidewalks • Greatest opportunities for Streetscaping adjacent to designated road allowance including plantings, decorative paving materials, decorative streetlights, etc. • Some property acquisition is required to accommodate wider sidewalks along the corridor and encroachments at intersections • Noise levels may increase due to projected traffic volumes.
GOOD	GOOD	VERY GOOD	VERY GOOD

Region of Waterloo

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Alternative Designs Evaluation Summary

Costs: What is the total cost of the alternative, including the cost for road construction, utility and street-lighting relocations, property acquisitions, traffic signal and intersection improvements, and landscaping?

Design Alternative 1 Do Nothing – Retain Roadway Cross-Section in its Current Configuration	Design Alternative 2 On Road Buffered Bike Lane	Design Alternative 3 Separated Bike Lane with Enhanced Sidewalk	Design Alternative 3a Separated Bike Lane with Physical barrier
• Increased costs for movement of goods and services as congestion increases. • No change to maintenance costs for road, pedestrian/ cycling facilities, or landscaping. • Increased traffic over fewer travel lanes increases frequency of required maintenance. • Increased traffic volume increases congestion and may lead to increased accident frequency due to gap reduction.	• Cross-section unit cost is $4,240/m. • Reduced costs for movement of goods and services as congestion decreases. • No change in maintenance costs for road, pedestrian/ cycling facilities, and landscaping.	• Cross-section unit cost is $4,320/m. • Reduced costs for movement of goods and services as congestion decreases. • Increased maintenance costs for road, pedestrian/ cycling facilities, and landscaping.	• Cross-section unit cost is $4,100/m. • Reduced costs for movement of goods and services as congestion decreases. • Increased maintenance costs for road, pedestrian/ cycling facilities, and landscaping.
POOR	GOOD	FAIR	VERY GOOD

Region of Waterloo

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Alternative Designs Evaluation Summary

For more information on how each alternative was evaluated visit the documents section at www.engagewr.ca/University-Ave

Design Alternative 1 Do Nothing – Retain Roadway Cross-Section in its Current Configuration	Design Alternative 2 On Road Buffered Bike Lane	Design Alternative 3 Separated Bike Lane with Enhanced Sidewalk	Design Alternative 3a Separated Bike Lane with Physical barrier
Does not address safety and design deficiencies identified in the problem/opportunity statement for this study.	This alternative fails to adequately address operational and safety deficiencies. It does not address the parameters laid out in the active transportation master plan.	This alternative does not address all pedestrian and cyclist conflicts that exist with this alternative.	This alternative balances transportation needs and enhances safety of pedestrians and cyclists while enhancing urban design / streetscaping along the corridor.
FAIR	GOOD	GOOD	VERY GOOD
4	3	2	1
✗	✗	✗	✓
Not carried forward	Not carried forward	Not carried forward	Carried forward as the preferred design alternative