

BEDFORD HIGHWAY FUNCTIONAL PLAN
APPENDIX H – TPM ASSESSMENT WORKSHEETS
IBI GROUP

1. Trigger
• Improve transit performance as part of HRM's Integrated Mobility Plan, 2017. • Bedford Highway identified as a proposed transit priority corridor • Improve transit operations as part of assignment.
2. Preliminary Assessment
• On time performance collected for the following routes: • Route 39: Flamingo; • Route 66: Penhorn; • Route 80: Sackville; • Route 81: Hemlock Ravine; • Route 82: Millwood; • Route 86: Basinview Express; • Route 89: Bedford; • Route 90: Larry Uteck; and • Route 135: Flamingo Express. • Transit delay was found to be a corridor wide concern; • Transit performance data showed three distinct sections of concern: • Bedford Highway from S of Highway 102 to Hatchery Lane; • Bedford Highway from Hatchery Lane to Southgate Drive; • Bedford Highway from Southgate Drive to Kearney Lake Road; and • Bedford Highway from Kearney Lake Road to Bayview Drive. • Sections of Concern carried forward. Localized issues will be analyzed separately.

Bedford Highway from S of Highway 102 to Hatchery Lane

2. Preliminary Assessment Continued	
Range of Potential Alternatives	
Potential List of TPM	Comments
R1 – Vehicular Movement Restrictions R2 – Transit Exemptions to Movement Restrictions R3 – Parking Restrictions R4 – Reserved Lanes	R1- N/A. No significant transit delays incurred along this section of the Bedford Highway. Overall general traffic operations are good. R2 – N/A. No turning restrictions present. R3 – N/A R4 – Overall, no significant delays experienced along the corridor.
TSP1 – Passive Transit Signal Priority TSP2 – Actuated Transit Signal Priority TSP3 – Active Transit Signal Priority TS1 – Traffic Signals Required by Transit TS2 – Transit Signal Displays	TSP1 – Bus operates in mixed traffic. Consider re-coordinating section to general traffic. Buses will also benefit TSP2 – Priority is buses on travelling along the Bedford Highway TSP3 – If required TS1 – N/A TS2 – N/A
PD1 – Busway PD2 – Transit Mall PD3 – Curbside Bus Lane PD4 – Offset Bus Lane PD5 – Median Busway PD6 – Central Bus Lane PD7 – Contraflow Bus Lane PD8 – Shoulder Bus Lane PL1 – Queue Jump Lane – Bus Through PL2 – Queue Jump Lane – Bus Left Turns PL3 – Queue By-pass Lane PL4 – Bus Bulb PL5 – Bus Bay PL6 – Off Street Transit Lane	PD1 to PD8 – ROW constraint in section. PL1 and PL3 – In general, dedicated RT lanes are unavailable for queue jump or queue by-pass opportunity. At locations where RT lanes are available, bus stops are on the farside of the intersection, would most likely not use the dedicated right turn lane to proceed through the intersection. Refer to the intersection of Bedford Highway at River Lane. Traffic operations are generally good around River Lane. No PL2– N/A. Localized measures will be reviewed in the following sections. PL 4 to PL5 – Poor transit performance is not a localized issue. It was proposed to remove the number of bus layby areas except at timing points throughout (PL5) the corridor. PL 6 – N/A

Potential TPM
TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic)
TSP3 – Active Transit Signal Priority

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3. TPM Selection/Assessment			
Criteria	Assessed	Potential TPM	Comments
Local vs. Corridor	Yes	TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic) TSP3 – Active Transit Signal Priority	Section wide concern.
Physical Impacts	N/A	-	-
Operations	N/A	-	-
Safety	N/A	-	Operations would only truncate and extend green times if TSP is active.
Enforcement	N/A	-	-
Public Acceptance	Yes	TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic) TSP3 – Active Transit Signal Priority	TSP1 – Coordinating signalized intersection would benefit general traffic. TSP3 – Based on data provided, buses operations are generally good within the area. TSP would only be activated if buses are behind schedule. It is expected that there will be marginal impact to conflicting movements. General traffic movement on the Bedford Highway should benefit from TSP actuation.
Organizational	N/A	-	No Impact.
Financial	Yes	TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic) TSP3 – Active Transit Signal Priority	TSP1 – Coordination studies to be completed. TSP3 – Additional equipment may be required to be installed on the buses.

4. Impact to Guiding Principals		
Guiding Principle	TPM	
	TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic)	TSP3 – Active Transit Signal Priority
Safety	- N/A	- N/A
Delay	- Improves delays for buses.	- Improves delays for buses.
Disruption to Road Users	- Benefit to traffic along the Bedford Highway	- Benefit to traffic along the Bedford Highway - Potential impact to cross streets and turning movements are marginal.
Consistency/Conspicuity	- N/A	- N/A

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4. Impact to Guiding Principles		
Pragmatism	- N/A	- Maintenance and operating costs may increase due to additional equipment. May not be significant of an increase.

Proposed TPM
TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic)
TSP3 – Active Transit Signal Priority

Bedford Highway from Hatchery Lane to Southgate Drive

2. Preliminary Assessment Continued	
Range of Potential Alternatives	
Potential List of TPM	Comments
R1 – Vehicular Movement Restrictions R2 – Transit Exemptions to Movement Restrictions R3 – Parking Restrictions R4 – Reserved Lanes	R1 – Not required. R2 – N/A. No turning restrictions present. R3 – N/A R4 – Single through lane for majority of section.
TSP1 – Passive Transit Signal Priority TSP2 – Actuated Transit Signal Priority TSP3 – Active Transit Signal Priority TS1 – Traffic Signals Required by Transit TS2 – Transit Signal Displays	TSP1 – Bus operates in mixed traffic. Consider re-coordinating section to general traffic, which will also benefit bus travel times. TSP2 – Priority is buses on travelling along the Bedford Highway TSP3 – If required. TS1 – N/A TS2 – N/A
PD1 – Busway PD2 – Transit Mall PD3 – Curbside Bus Lane PD4 – Offset Bus Lane PD5 – Median Busway PD6 – Central Bus Lane PD7 – Contraflow Bus Lane PD8 – Shoulder Bus Lane PL1 – Queue Jump Lane – Bus Through PL2 – Queue Jump Lane – Bus Left Turns PL3 – Queue By-pass Lane PL4 – Bus Bulb PL5 – Bus Bay PL6 – Off Street Transit Lane	PD1 to PD8 – ROW constraint in section. Section between Hammonds Plains Road and Moirs Mill Road can accommodate a short curbside transit lane (PD3). PL1 to PL3 – In general, dedicated RT lanes are unavailable for queue jump or queue by-pass opportunity. PL2– N/A. Localized measures will be reviewed in the following sections. PL 4 to PL5 –It was proposed to remove the number of bus layby areas except at timing points throughout (PL5) the corridor. PL 6 – N/A

Potential TPM
TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic) PD3 – Curbside Bus Lane TSP3 – Active Transit Signal Priority

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3. TPM Selection/Assessment			
Criteria	Assessed	Potential TPM	Comments
Local vs. Corridor	Yes	TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic) TSP3 – Active Transit Signal Priority PD3 – Curbside Bus Lane	Section wide concern.
Physical Impacts	Yes	PD3 – Curbside Bus Lane	Modifications to existing geometry would be required at Moirs Mill Road and Hammonds Plains Road.
Operations	Yes	PD3 – Curbside Bus Lane	PD3- bus operations between Moirs Mill Road and Hammonds Plains Road may be impacted due to interactions with driveway traffic.
Safety	Yes	TSP3 – Active Transit Signal Priority PD3 – Curbside Bus Lane	TSP3 - Operations would only truncate and extend green times if TSP is active. PD3- Interactions between buses and vehicles entering driveways between Moirs Mill Road and Hammonds Plains Road would need to be reviewed.
Enforcement	Yes	PD3 – Curbside Bus Lane	PD3 – May be difficult to enforce.
Public Acceptance	Yes	TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic) TSP3 – Active Transit Signal Priority PD3 – Curbside Bus Lane	TSP1 – Coordinating signalized intersection would benefit general traffic. TSP3 – Based on data provided, buses operations are generally good within the area. TSP would only be activated if buses are behind schedule. It is expected that there will be marginal impact to conflicting movements. General traffic movement on the Bedford Highway should benefit from TSP actuation. PD3- Curbside bus lane only stretches from Moirs Mill Road to Hammonds Plains Road. Public acceptance should not be an issue.
Organizational	N/A	-	No Impact.
Financial	Yes	TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic) TSP3 – Active Transit Signal Priority PD3- Curbside Bus Lane	TSP1 – Coordination studies to be completed. TSP3 – Additional equipment may be required to be installed on the buses. PD3 – Curbside bus lane would need to be constructed.

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4. Impact to Guiding Principals			
Guiding Principle	TPM		
	TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic)	TSP3 – Active Transit Signal Priority	PD3- Curbside Bus Lane
Safety	- N/A	- N/A	- Interactions between driveway accesses and bus movements would need to be reviewed.
Delay	- Improves delays for buses.	- Improves delays for buses.	- Southbound through traffic may be impacted.
Disruption to Road Users	- Benefit to traffic along the Bedford Highway	- Benefit to traffic along the Bedford Highway - Potential impact to cross streets and turning movements are marginal.	- Traffic accessing driveways and through traffic (southbound) between Moirs Mill Road and Hammonds Plains Road will be impacted
Consistency/Conspicuity	- N/A	- N/A	- Signage and lane markings need to be clear to all road users.
Pragmatism	- N/A	- Maintenance and operating costs may increase due to additional equipment. May not be significant of an increase.	- Curbside lane will take a lane away from general traffic.

Proposed TPM
TSP1 – Passive Transit Signal Priority (Provide coordinating for general traffic) TSP3 – Active Transit Signal Priority, if required PD3 – Curbside bus lane

Bedford Highway from Southgate Road to Kearney Lake Road

2. Preliminary Assessment Continued	
Range of Potential Alternatives	
Potential List of TPM	Comments
R1 – Vehicular Movement Restrictions R2 – Transit Exemptions to Movement Restrictions R3 – Parking Restrictions R4 – Reserved Lanes	R1- May be required to help with progression along the two lane cross-sections. R1 – not required. R2 – N/A. No turning restrictions present. R3 – N/A. R4 – ROW is two or three lanes throughout this section. Reserved lanes would not be applicable to two lane sections. Three lane sections may provide some benefits with reserved lanes; however, transitioning into and out of the reserved lane may disbenefit transit operations. Furthermore, sight lines would need to be review for left turn vehicles. Turn restrictions (R1) may be required.
TSP1 – Passive Transit Signal Priority TSP2 – Actuated Transit Signal Priority TSP3 – Active Transit Signal Priority TS1 – Traffic Signals Required by Transit TS2 – Transit Signal Displays	TSP1 – Only three signalized intersections that are far apart. TSP2 – Priority is buses on travelling along the Bedford Highway TSP3 – Could provide potential benefits for buses travelling along the Bedford Highway. TS1 – N/A. Transit vehicles are traveling along the Bedford Highway. TS2 – N/A. Installation of new signals would cause additional signal delay to transit vehicles.
PD1 – Busway PD2 – Transit Mall PD3 – Curbside Bus Lane PD4 – Offset Bus Lane PD5 – Median Busway PD6 – Central Bus Lane PD7 – Contraflow Bus Lane PD8 – Shoulder Bus Lane PL1 – Queue Jump Lane – Bus Through PL2 – Queue Jump Lane – Bus Left Turns PL3 – Queue By-pass Lane PL4 – Bus Bulb PL5 – Bus Bay PL6 – Off Street Transit Lane	PD1 to PD8 – ROW constraint in section. PL1 and PL3 – In general, dedicated RT lanes are unavailable for queue jump or queue by-pass opportunity. There are only three signalized intersections where queue by-pass lanes/queue jump lanes can be applied. As a result, the benefits to transit operations may not be significant, when compared to the cost to implement these measures. PL2 – N/A. Priority for buses travelling along Bedford Highway. PL 4 to PL5 – Poor transit performance is not a localized issue. It was proposed to remove the number of bus layby areas, except at timing points, throughout (PL5) the corridor. PL 6 – N/A.

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Potential TPM
R1 – Vehicle Movement Restriction TSP3 – Active Transit Signal Priority

3. TPM Selection/Assessment			
Criteria	Assessed	Potential TPM	Comments
Local vs. Corridor	Yes	R1 – Vehicle Movement Restriction TSP3 – Active Transit Signal Priority	Section wide concern.
Physical Impacts	Yes	R1 – Vehicle Movement Restriction TSP3 – Active Transit Signal Priority	R1 – No direct physical impact at locations of turn restriction. May have impact on upstream or downstream intersection, where rerouted vehicles may U-turn. TSP3 – No physical impacts.
Operations	Yes	R1 – Vehicle Movement Restriction TSP3 – Active Transit Signal Priority	R1 – Increased delay for rerouted vehicles. TSP3 – May benefit through traffic as TSP extends the green time along the Bedford Highway.
Safety	Yes	R1 – Vehicle Movement Restriction TSP3 – Active Transit Signal Priority	R1 – Need to review safety implications. There may be safety impacts at locations up and downstream of where restriction is in place. TSP3 - Operations would only truncate and extend green times if TSP is active. This will require additional on-board bus equipment.
Enforcement	Yes	R1 – Vehicle Movement Restriction TSP3 – Active Transit Signal Priority	R1 – Difficult to enforce. TSP3 – Not required.
Public Acceptance	Yes	R1 – Vehicle Movement Restriction TSP3 – Active Transit Signal Priority	R1 – May not be acceptable to public due to inconveniencing the turning vehicles. TSP3 – Bus delays generally are poor inbound in the AM, and outbound in the PM. TSP may be active frequently. Benefit for vehicles travelling along Bedford Highway, but may impact side street traffic.
Organizational	N/A	-	No Impact.

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3. TPM Selection/Assessment			
Financial	Yes	R1 – Vehicle Movement Restriction TSP3 – Active Transit Signal Priority	R1 – Additional signage would be required. TSP3 – Additional equipment may be required to be installed on the buses.

4. Impact to Guiding Principals		
Guiding Principle	TPM	
	R1 – Vehicle Movement Restriction	TSP3 – Active Transit Signal Priority
Safety	- N/A	- N/A
Delay	- Improves delays for buses, by removing idling left turning vehicles from impeding bus movement.	- Improves delays for buses.
Disruption to Road Users	- Benefit to traffic along the Bedford Highway - Left turning vehicles would need to find alternate routes.	- Benefit to traffic along the Bedford Highway - Potential impact to cross streets and turning movements are marginal.
Consistency/Conspicuity	- Signage needs to be clear to all road users.	- N/A
Pragmatism	- Accesses and driveways must still be accessible. - Due to the narrow ROW, adjacent intersections may need to be redesigned to accommodate u-turning vehicles. - May not be practical to restrict driveway access throughout this section, especially SBL turn movements.	- Maintenance and operating costs may increase due to additional equipment. May not be significant of an increase.

Proposed TPM
TSP3 – Active Transit Signal Priority

Bedford Highway from Kearney Lake Road to Bayview Drive

2. Preliminary Assessment Continued	
Range of Potential Alternatives	
Potential List of TPM	Comments
R1 – Vehicular Movement Restrictions R2 – Transit Exemptions to Movement Restrictions R3 – Parking Restrictions R4 – Reserved Lanes	R1 – Not required. R2 – N/A. No turning restrictions present. R3 – N/A R4 – Significant variability in transit vehicle arrival times during the AM peak period inbound.
TSP1 – Passive Transit Signal Priority TSP2 – Actuated Transit Signal Priority TSP3 – Active Transit Signal Priority TS1 – Traffic Signals Required by Transit TS2 – Transit Signal Displays	TSP1 – With the construction of the developments on Seton Road, coordination of the traffic signal will aid in progression for transit and traffic. TSP2 – Priority is buses on travelling along the Bedford Highway TSP3 – Could provide potential benefits for buses travelling along the Bedford Highway. TS1 – N/A. Transit vehicles are traveling along the Bedford Highway. TS2 – N/A. Installation of new signals would cause additional signal delay to transit vehicles.
PD1 – Busway PD2 – Transit Mall PD3 – Curbside Bus Lane PD4 – Offset Bus Lane PD5 – Median Busway PD6 – Central Bus Lane PD7 – Contraflow Bus Lane PD8 – Shoulder Bus Lane PL1 – Queue Jump Lane – Bus Through PL2 – Queue Jump Lane – Bus Left Turns PL3 – Queue By-pass Lane PL4 – Bus Bulb PL5 – Bus Bay PL6 – Off Street Transit Lane	PD1 to PD2, PD5 to PD8 – ROW constraint in section. Significant geometry changes would be required. PD3 – Would require widening, but would aid in transit operations traveling along the Bedford Highway. PL1 and PL3 – In general, dedicated RT lanes are unavailable for queue jump or queue by-pass opportunity. PL2 – N/A. Priority for buses travelling along Bedford Highway PL 4 to PL5 – Poor transit performance is not a localized issue. It was proposed to remove the number of bus layby areas, except at timing points, throughout (PL5) the corridor. PL 6 – N/A

Potential TPM
R4 – Reserved Bus Lane PD3 – Curbside Bus Lane TSP1- Traffic Signal Coordination TSP3 – Active Transit Signal Priority

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3. TPM Selection/Assessment			
Criteria	Assessed	Potential TPM	Comments
Local vs. Corridor	Yes	R4 – Reserved Bus Lane PD3 – Curbside Bus Lane TSP1 – Passive Traffic Signal Priority TSP3 – Active Transit Signal Priority	Section wide concern.
Physical Impacts	Yes	R4 – Reserved Bus Lane PD3 – Curbside Bus Lane TSP1 – Passive Transit Signal Priority TSP3 – Active Transit Signal Priority	R4 – Would require widening to accommodate additional lane. PD3 - Would require widening to accommodate additional lane. TSP1 – N/A. No physical impacts. TSP3 – N/A. No physical impacts.
Operations	Yes	R4 – Reserved Bus Lane PD3 – Curbside Bus Lane TSP1 – Passive Transit Signal Priority TSP3 – Active Transit Signal Priority	R4 – benefit transit vehicles. General traffic would be similar. Right turn treatments at signalized and un-signalized intersections would need to be reviewed. PD3 - benefit transit vehicles. General traffic would be similar. Right turn treatments at signalized and un-signalized intersections would need to be reviewed. TSP1- Benefit traffic progression along the Bedford Highway. TSP3 – May benefit through traffic as TSP extends the green time along the Bedford Highway.
Safety	Yes	R4 – Reserved Bus Lane PD3 – Curbside Bus Lane TSP1 – Passive Transit Signal Priority TSP3 – Active Transit Signal Priority	R4 and PD3 – Interaction with right turning vehicles and buses travelling through the intersection would be a concern. TSP1 – N/A TSP3 - Operations would only truncate and extend green times if TSP is active.
Enforcement	Yes	R4 – Reserved Bus Lane PD3 – Curbside Bus Lane TSP1 – Passive Transit Signal Priority TSP3 – Active Transit Signal Priority	PD3 and R4 – Difficult to enforce. TSP1 – N/A TSP3 – N/A
Public Acceptance	Yes	R4 – Reserved Bus Lane PD3 – Curbside Bus Lane	R4 – - May not be acceptable to public due to inconveniencing the turning vehicles. Operations by TOD

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3. TPM Selection/Assessment			
		TSP3 – Active Transit Signal Priority	may be acceptable by general public. PD3 - May not be acceptable to public due to inconveniencing the turning vehicles. During the Off peak, there will still be transit vehicles using the transit lane. As a result, it may not be perceived as underused. TSP3 – Bus delays generally are poor inbound in the AM, and outbound in the PM. TSP may be active frequently. Benefit for vehicles travelling along Bedford Highway, but may impact side street traffic.
Organizational	N/A	-	No Impact.
Financial	Yes	R4 – Reserved Bus Lane PD3 – Curbside Bus Lane TSP1- Passive Transit Signal Priority TSP3 – Active Transit Signal Priority	R4 – Additional signage would be required and lane markings. PD3 – Additional signage would be required and lane markings. TSP1 - TSP3 – Additional equipment may be required to be installed on the buses.

4. Impact to Guiding Principals				
Guiding Principle	TPM			
	R4 – Reserved Bus Lane PD3- Curbside Bus Lane	TSP1 – Passive Transit Signal Priority	TSP3 – Active Transit Signal Priority	
Safety	- N/A	- N/A	- N/A	
Delay	- Require careful design at both signalized and unsignalized intersections.	- Improves delays for buses.	- Improves delays for buses.	
Disruption to Road Users	- Right turning vehicles may be slightly impacted.	- Benefit to traffic along the Bedford Highway.	- Benefit to traffic along the Bedford Highway - Potential impact to cross streets and turning movements are marginal.	

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Consistency/Conspicuity	- Signage and lane markings need to be clear to all road users.	- N/A	- N/A
Pragmatism	- Would require widening to accommodate an additional lane. If capacity is significantly impacted with dedicating a lane to transit all day (PD3), Reserved Bus Lane (R4) is proposed.	- N/A	- Maintenance and operating costs may increase due to additional equipment. May not be significant of an increase.

Proposed TPM
PD3 – Curbside Bus lane or R4 – Reserved Bus Lane (by TOD inbound during the AM/Outbound during the PM) TSP1 – Passive Traffic Signal Priority TSP3 – Active Transit Signal Priority

Flamingo Drive

1. Trigger
• Improve transit performance as part of HRM's Integrated Mobility Plan, 2017. • Bedford Highway identified as a proposed transit priority corridor • Improve transit operations as part of assignment.
2. Preliminary Assessment
• On time performance collected for the following routes: • Route 39: Flamingo; and • Route 135: Flamingo Express. • Route 39 Flamingo: • Eastbound delays may be attributable to the delays experienced along the Bedford Highway. Specifically, in the southbound direction during the AM peak; • Eastbound left turns impeding the eastbound right turning vehicles may also contribute to the delays experienced by inbound buses; • Delays incurred by outbound transit vehicles occur prior to buses entering the Bedford Highway corridor. Increases in delay along the Bedford Highway are marginal. There is minimal delay associated with the NBL turning transit vehicle; and • Transit data indicates that the MSVU is source of some delay incurred by the transit vehicle. • Route 135 Flamingo Express: • Route 135 travels a short distance along the Bedford Highway. The MSVU is the terminal point for this route. Any delay incurred would not be a result of operations along the Bedford Highway.

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2. Preliminary Assessment Continued	
Range of Potential Alternatives	
Potential List of TPM	Comments
R1 – Vehicular Movement Restrictions R2 – Transit Exemptions to Movement Restrictions R3 – Parking Restrictions R4 – Reserved Lanes	R1- N/A. Eastbound delays may be attributable to the delays experienced along the Bedford Highway. Specifically, in the southbound direction during the AM peak. R2 – N/A. No movements are restricted under current conditions. R3- N/A. R4 – N/A. Only two approach lanes. One lane for left turns, and one lane for right turns.
TSP1 – Passive Transit Signal Priority TSP2 – Actuated Transit Signal Priority TSP3 – Active Transit Signal Priority TS1 – Traffic Signals Required by Transit TS2 – Transit Signal Displays	TSP1 –N/A TSP2 – Phase insert would not provide benefits to transit vehicles making the eastbound right turn. TSP3 – May be able to provide more opportunities for buses to perform the turn by clearing general traffic TS1 – N/A. Bedford Highway at Flamingo Drive already signalized. TS2 – Dedicated transit display may not provide benefits, as general traffic queues may contribute to the delays experienced by transit vehicles.
PD1 – Busway PD2 – Transit Mall PD3 – Curbside Bus Lane PD4 – Offset Bus Lane PD5 – Median Busway PD6 – Central Bus Lane PD7 – Contraflow Bus Lane PD8 – Shoulder Bus Lane PL1 – Queue Jump Lane – Bus Through PL2 – Queue Jump Lane – Bus Left Turns PL3 – Queue By-pass Lane PL4 – Bus Bulb PL5 – Bus Bay PL6 – Off Street Transit Lane	PD1 to PD8 – N/A. Only one intersection on the Bedford Highway. Route 39 travels along the Bedford Highway for only two intersection. It is expected that there would be marginal benefits in installing dedicated facilities for this short portion. PL1 – N/A. Buses are making the eastbound right turn. PL2 to PL6–Dedicated southbound transit lane proposed to accommodate transit vehicles. Reason for delays may be attributed eastbound queues and southbound queue spillback along the Bedford Highway.

Potential TPM
TSP3 – Active Transit Signal Priority

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3. TPM Selection/Assessment			
Criteria	Assessed	Potential TPM	Comments
Local vs. Corridor	Yes	TSP3 – Active Transit Signal Priority	Local issues. More specifically, eastbound right turn movement.
Physical Impacts	N/A	-	No physical impacts to roadway geometry.
Operations	Yes	TSP3 – Active Transit Signal Priority	Benefit side street operations.
Safety	N/A	-	No safety concerns related to the provision of either measure.
Enforcement	N/A	-	-
Public Acceptance	N/A	-	-
Organizational	N/A	-	-
Financial	Yes	TSP3 – Active Transit Signal Priority	Would require additional on-board equipment.

4. Impact to Guiding Principals	
Guiding Principle	TPM
	TSP3 – Active Transit Signal Priority
Safety	- N/A
Delay	- Delays should improve on the side street
Disruption to Road Users	- Minor disruptions to general traffic.
Consistency/Conspicuity	- No impact.
Pragmatism	- Maintenance and operating costs may increase.

Proposed TPM
TSP3 – Active Transit Signal Priority

Dartmouth Road

1. Trigger
- Improve transit performance as part of HRM's Integrated Mobility Plan, 2017. - Bedford Highway identified as a proposed transit priority corridor - Improve transit operations as part of assignment.

2. Preliminary Assessment
- On time performance collected for the following routes: - Route 66: Dartmouth - Route 66: Dartmouth: - Southbound left turn was indicated to be a source of delay for transit vehicles. - Westbound right turn was indicated to be a source of delay for transit vehicles. Currently, the westbound right turn movement is channelized and is not controlled by a signal. Delays may be attributed to downstream queues. The proposed coordination plans for this segment can help transit movements.

3. Preliminary Assessment Continued	
Range of Potential Alternatives	
Potential List of TPM	Comments
R1 – Vehicular Movement Restrictions	R1 – N/A.
R2 – Transit Exemptions to Movement Restrictions	R2 – N/A. No movement restrictions in place.
R3 – Parking Restrictions	R3 – N/A. Southbound left turn is the concern.
R4 – Reserved Lanes	R4 – N/A.
TSP1 – Passive Transit Signal Priority	TSP1 – N/A.
TSP2 – Actuated Transit Signal Priority	TSP2 – Bus phase would need to be inserted to serve either through, or left turning transit.
TSP3 – Active Transit Signal Priority	TSP3 – Reviewed under segment assessment.
TS1 – Traffic Signals Required by Transit	TS1- N/A.
TS2 – Transit Signal Displays	TS2 – N/A.
PD1 – Busway	PD1 to PD8 – N/A.
PD2 – Transit Mall	PL1 – N/A.
PD3 – Curbside Bus Lane	PL2 – Southbound left turning vehicles can use queue jump by-pass lane (PL3) as queue jump lane.
PD4 – Offset Bus Lane	PL3 – Reviewed under segment assessment.
PD5 – Median Busway	PL4 to PL6 – N/A.
PD6 – Central Bus Lane	
PD7 – Contraflow Bus Lane	
PD8 – Shoulder Bus Lane	

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PL1 – Queue Jump Lane – Bus Through PL2 – Queue Jump Lane – Bus Left Turns PL3 – Queue By-pass Lane PL4 – Bus Bulb PL5 – Bus Bay PL6 – Off Street Transit Lane	
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Potential TPM
TSP2 – Actuated Transit Signal Priority
PL2 – Queue Jump Lane – Bus Left Turns

4. TPM Selection/Assessment			
Criteria	Assessed	Potential TPM	Comments
Local vs. Corridor	Yes	TSP2 – Actuated Transit Signal Priority PL2 – Queue Jump Lane – Bus Left Turns	Local issue.
Physical Impacts	N/A	TSP2 – Actuated Transit Signal Priority PL2 – Queue Jump Lane – Bus Left Turns	TS2 – Will require additional transit only signal head. PL2 – will require modifications to intersection.
Operations	Yes	TSP2 – Actuated Transit Signal Priority PL2 – Queue Jump Lane – Bus Left Turns	TSP2 – Queue jump phase will benefit southbound left turn transit movement. May impact through transit, as through transit will only be able to proceed through intersection on the dedicated phase.
Safety	N/A	-	No safety concerns related to the provision of either measure.
Enforcement	Yes	PL2 – Queue Jump Lane – Bus Left Turns	PL2 – difficult to enforce.
Public Acceptance	N/A	-	-
Organizational	N/A	-	-
Financial	Yes	TSP2 – Actuated Transit Signal Priority PL2 – Queue Jump Lane – Bus Left Turns	TSP2- Would require additional on-street equipment. PL2 – Construction costs to implement queue jump lane.

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5. Impact to Guiding Principals		
Guiding Principle	TPM	
	TSP2 – Actuated Transit Signal Priority	PL2 – Queue Jump Lane – Bus Left Turns
Safety	- N/A	- N/A
Delay	- Transit may experience some delay, as transit vehicles will only have a single opportunity to turn.	- If southbound left turn is light, queue jump lane may not be needed. It will be to the discretion of the bus driver to use the queue jump lane or general traffic lane.
Disruption to Road Users	- Minor disruptions to general traffic.	- Minor disruptions to general traffic.
Consistency/Conspicuity	- Purpose of transit signal head would need to be clear to all road users.	- Signage and pavement markings need to be clear to all road users.
Pragmatism	- Maintenance and operating costs may increase.	- Queue jump lane will require reduction from two to one general purpose lane in the southbound direction.

Proposed TPM
TSP2 – Actuated Transit Signal Priority
PL2 – Queue Jump Lane – Bus Left Turns

Larry Uteck Boulevard

1. Trigger
- Improve transit performance as part of HRM's Integrated Mobility Plan, 2017. - Bedford Highway identified as a proposed transit priority corridor - Improve transit operations as part of assignment.

2. Preliminary Assessment
- On time performance collected for the following routes: - Route 90: Larry Uteck, Route 91 (future route) - Route 90: Larry Uteck: - Overall operations are good at the intersection of Bedford Highway at Larry Uteck Boulevard under existing and future projections. - Transit data indicates inbound buses are delayed prior to entering the Bedford Highway. Eastbound right turns are channelized. - Northbound left turn buses are also behind schedule.

3. Preliminary Assessment Continued	
Range of Potential Alternatives	
Potential List of TPM	Comments
R1 – Vehicular Movement Restrictions R2 – Transit Exemptions to Movement Restrictions R3 – Parking Restrictions R4 – Reserved Lanes	R1 – N/A. R2 – N/A. No movement restrictions in place. R3 – N/A. Southbound left turn is the concern. R4 – N/A.
TSP1 – Passive Transit Signal Priority TSP2 – Actuated Transit Signal Priority TSP3 – Active Transit Signal Priority TS1 – Traffic Signals Required by Transit TS2 – Transit Signal Displays	TSP1 – Intersection is far from adjacent signalized intersections. Re-timing intersection may help with delays incurred by transit vehicles during the OFF peak period. TSP2 to TSP3 – N/A. TS1 – N/A. TS2 – N/A.
PD1 – Busway PD2 – Transit Mall PD3 – Curbside Bus Lane PD4 – Offset Bus Lane PD5 – Median Busway PD6 – Central Bus Lane PD7 – Contraflow Bus Lane	PD1 to PD8 – N/A. PL1 and PL3, PL4 to PL6 – N/A. PL2 – General traffic operations are good during all peaks under the existing and future conditions.

**BEDFORD HIGHWAY FUNCTIONAL PLAN
APPENDIX H – TPM ASSESSMENT WORKSHEETS
IBI GROUP**

PD8 – Shoulder Bus Lane PL1 – Queue Jump Lane – Bus Through PL2 – Queue Jump Lane – Bus Left Turns PL3 – Queue By-pass Lane PL4 – Bus Bulb PL5 – Bus Bay PL6 – Off Street Transit Lane	
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Potential TPM
TSP1 – Passive Transit Signal Priority

4. TPM Selection/Assessment			
Criteria	Assessed	Potential TPM	Comments
Local vs. Corridor	Yes	TSP1 – Passive Transit Signal Priority	Local concern.
Physical Impacts	N/A	-	-
Operations	Yes	TSP1 – Passive Transit Signal Priority	Traffic operations may benefit with retiming of intersection.
Safety	N/A	-	-
Enforcement	N/A	-	-
Public Acceptance	N/A	-	-
Organizational	N/A	-	-
Financial	Yes	TSP1 – Passive Transit Signal Priority	Retiming study may have minor financial impact.

5. Impact to Guiding Principals	
Guiding Principle	TPM
	TSP1 – Passive Transit Signal Priority
Safety	- N/A.
Delay	- Retiming may improve traffic operations.
Disruption to Road Users	- N/A.
Consistency/Conspicuity	- N/A.
Pragmatism	- N/A.

Proposed TPM
TSP1 – Passive Transit Signal Priority