

Wellington Road 46 Road Diet

Wellington County Roads Committee

September 14, 2021



DILLON
CONSULTING

Agenda



Overview



Approach and Key Recommendations

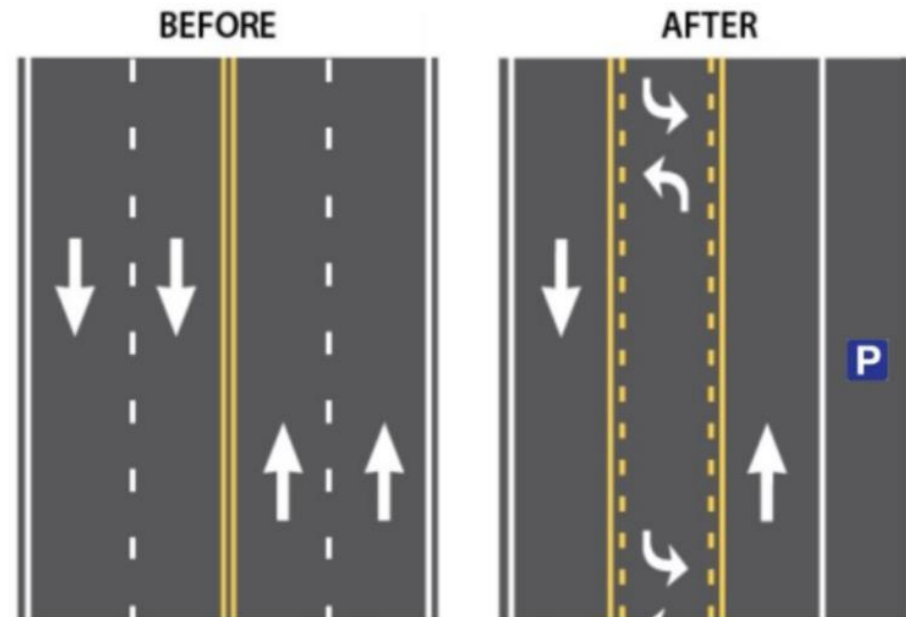
- Existing Conditions
- Future Conditions
- Strategic Capacity Review
- Proposed Road Diet



Discussion

Overview

- **Goal:** Assess the potential effects of a proposed 'road diet' through the community of Aberfoyle
- **Road Diet:** Conversion of the existing four-lane cross section, two travel lanes in each direction between Wellington Road 34 and Gilmour Road, to a single travel lane in each direction with a two-way centre left-turn lane and a parking lane



Approach

- Observed traffic volumes from 2017-2018 used to identify existing conditions
- Estimated traffic volumes compared to planning level lane capacities to identify performance on different sections of Wellington Road 46
- Future conditions (2041) are established based on background traffic growth, area population and employment growth, and available local secondary plans in the County
- Traffic link volumes estimated for Wellington Road 46 and compared to the lane capacities
- Review of the strategic corridor capacity is undertaken, including on adjacent and parallel facilities





Existing Conditions

Existing Conditions – Network Characteristics

- Major arterial roadway that was formerly Highway 6
 - Five-lanes between Highway 401 and McLean Road
 - Four-lanes between McLean Road and Wellington Road 34
 - Two-lanes between Wellington Road 34 and Maltby Road
- There is sufficient capacity to carry the existing demand between Wellington Road 34 and Highway 401
- Between Maltby Road to Wellington Road 34, where the cross section of Wellington Road 46 is reduced to two-lanes, volumes are approaching levels where the flow is unstable and minor incidents can cause delays

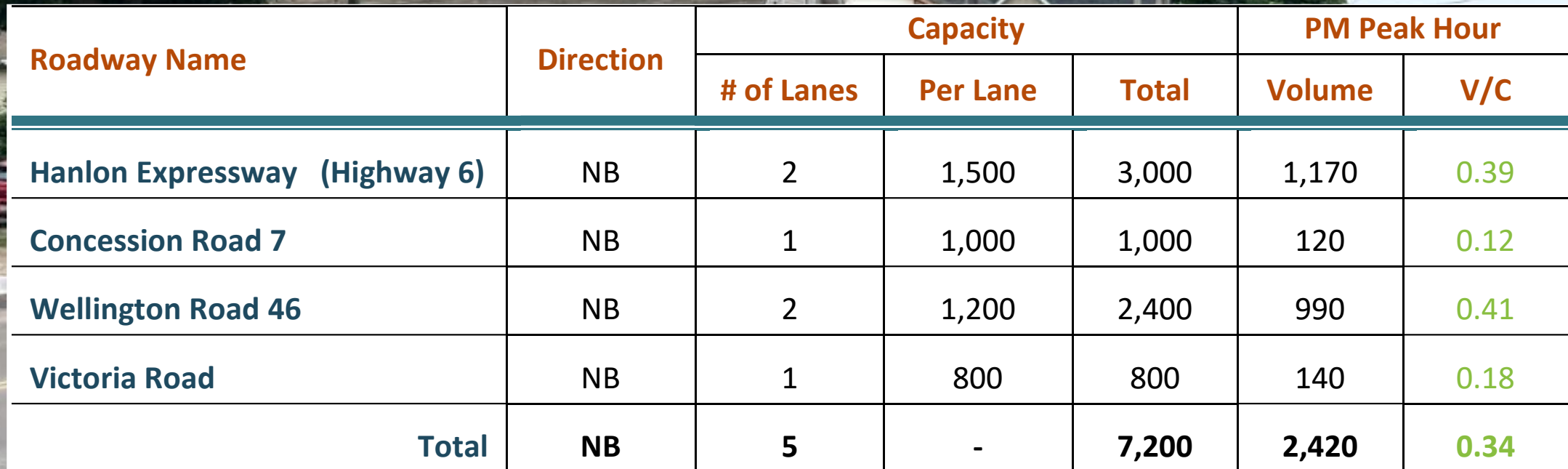


Existing Conditions – Roadway Capacity Assessment

Section	Number of Travel Lanes (2-way)	Lane Capacity (veh/hr)	Directional Capacity (veh/hr)	Existing AADT	DHV (%)	Directional Split (%)	PM Peak Hour	V/C Ratio
Maltby Road to County Road 34	2	1,200	1,200	19,381	9%	55%	960	0.80
County Road 34 to McLean Road	4	1,200	2,400	19,392	8.5%	60%	990	0.41
McLean Road to Highway 401	4	1,200	2,400	23,560	7.5%	55%	970	0.40

Note: V/C Range: < 0.70 = Good Capacity, 0.70 – 0.85 = Approaching Capacity, > 0.85 = Over Capacity Conditions

Existing Conditions – Critical Screenline (Aberfoyle) Capacity Assessment



Roadway Name	Direction	Capacity			PM Peak Hour	
		# of Lanes	Per Lane	Total	Volume	V/C
Hanlon Expressway (Highway 6)	NB	2	1,500	3,000	1,170	0.39
Concession Road 7	NB	1	1,000	1,000	120	0.12
Wellington Road 46	NB	2	1,200	2,400	990	0.41
Victoria Road	NB	1	800	800	140	0.18
Total	NB	5	-	7,200	2,420	0.34



Future Conditions

Future Conditions – Area Growth

- A compounded annual growth rate (CAGR) of 0.4% was applied to the existing traffic volumes to estimate general traffic growth

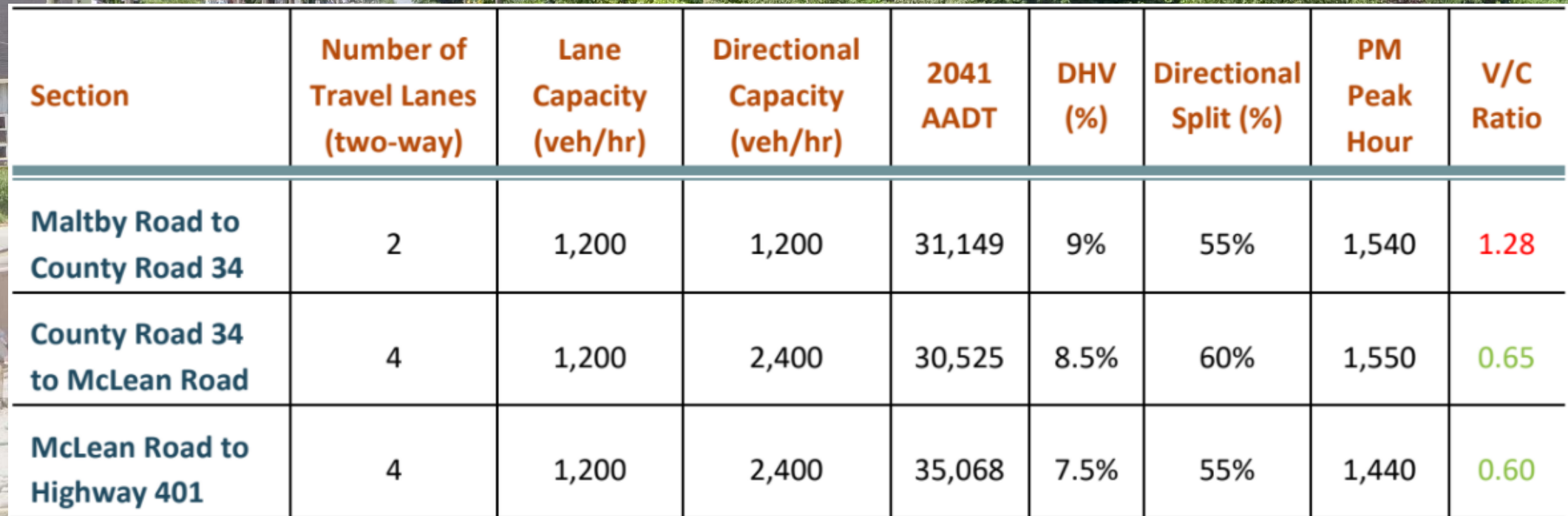
Daily Trip Generation (from population and employment growth)

- Anticipated daily vehicular trip generation for housing growth was calculated

Location	Total Residential Trip Generation	Employment Based Trip Generation	Total Daily Trip Generation
Township of Puslinch	5,737	344	6,081
Township of Guelph/Eramosa	3,241	194	3,435
Township of Centre Wellington	59,879	3,593	63,472

Location	Total Daily Trip Generation
Clair-Maltby	7,413

Future Conditions – Roadway Capacity Assessment



Section	Number of Travel Lanes (two-way)	Lane Capacity (veh/hr)	Directional Capacity (veh/hr)	2041 AADT	DHV (%)	Directional Split (%)	PM Peak Hour	V/C Ratio
Maltby Road to County Road 34	2	1,200	1,200	31,149	9%	55%	1,540	1.28
County Road 34 to McLean Road	4	1,200	2,400	30,525	8.5%	60%	1,550	0.65
McLean Road to Highway 401	4	1,200	2,400	35,068	7.5%	55%	1,440	0.60

Note: V/C Range: < 0.70 = Good Capacity, 0.70 – 0.85 = Approaching Capacity, > 0.85 = Over Capacity Conditions

Future Conditions – Critical Screenline (Aberfoyle) Capacity Assessment

Roadway Name	Direction	Capacity			PM Peak Hour	
		# of Lanes	Per Lane	Total	Volume	V/C
Hanlon Expressway (Highway 6)	NB	2	1,800	3,600	1,880	0.52
Concession Road 7	NB	1	1,000	1,000	60	0.06
Wellington Road 46	NB	2	1,200	2,400	1,550	0.65
Victoria Road	NB	1	1,000	1,000	460	0.46
Total	NB	6	-	8,000	3,950	0.49

Future Conditions – Critical Screenline (Aberfoyle) Capacity Assessment – Road Diet

Roadway Name	Direction	Capacity			PM Peak Hour	
		# of Lanes	Per Lane	Total	Volume	V/C
Hanlon Expressway (Highway 6)	NB	2	1,800	3,600	1,880	0.52
Concession Road 7	NB	1	1,000	1,000	60	0.06
Wellington Road 46	NB	1	1,200	1,200	1,550	1.29
Victoria Road	NB	1	1,000	1,000	460	0.46
Total	NB	5	-	6,800	3,950	0.58



Future Diversion Potential

Future Diversion Potential



Road Diet would require
550 – 700 future (2041)
northbound PM peak hour
vehicle trips to be diverted
from Wellington Road 46

Future Diversion Potential

- **Assessed origins and destinations of trips on WR 46**
 - Northbound trips on WR46 south of Aberfoyle in PM peak hour are almost entirely destined to locations in the eastern half of Guelph
 - 60% to southeast Guelph; 40% destined to northeast Guelph
- **Reviewed travel time saving using alternative route via Hanlon Expressway**
 - Travel distance using Hanlon Expressway 25-50% longer
 - Travel times during peak hours 25% longer. Actual times vary depending on length of trip but range is 7-10 minute of additional travel time per user
- **Reviewed past studies**
 - Gordon Street EA
 - Preliminary Design Review and Detailed Design under the Class Environmental Assessment (EA) for improvements to Highway 6 (from Highway 401 to Maltby Road) and Highway 401 (Wellington Road 36 to Wellington Road 35)
 - 1995 Preliminary Design Study

Future Diversion Potential - Conclusion

Diversion away from WR 46 as a result of the planned improvements (Morrison By-Pass) not significant enough to suggest that lane/capacity reductions on WR 46 will result in satisfactory operating conditions





Summary

Summary

- By 2041, the two-lane section of Wellington Road 46 is forecast to experience significant congestion between Maltby Road and County Road 34
- A reduction in the capacity between Gilmour Road and County Road 34 would result in capacity issues
- The broader strategic corridor network has capacity to absorb the 550-700 peak hour vehicles, but diversion of this magnitude not forecast to occur due to origin-destination of trips and associated travel time and distance increases
- The Morriston By-Pass is likely to result in some reduction in volume in the WR 46 corridor, it will not be significant enough to justify reduced capacity on WR 46

Summary

- Any reduction in capacity on Wellington Road 46 through Aberfoyle will result in a significant volume increase on adjacent non-County roadways
- A road diet through the community of Aberfoyle is feasible from a strategic capacity perspective but the commensurate impacts on the adjacent municipal network is not desirable from an operational and road safety perspective
- Future review and study required once future infrastructure and service implemented (Morrison By-Pass; All-day, two-way rail service on Kitchener line). This could take the form of a Municipal Class EA where alternative methods and alternative design concepts would be fully explored (ie., impacts and costs)



Discussion



Thank you