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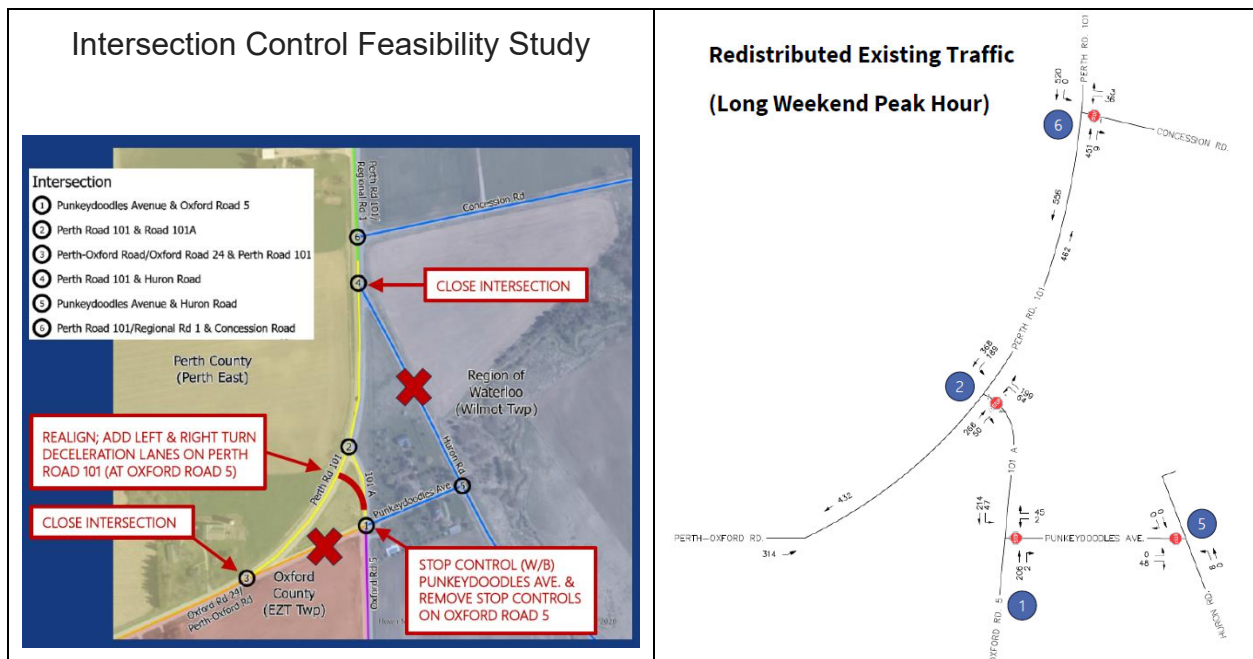
Critique on Proposed Realignment of Perth Rd 101 & Perth Rd 101A

Improving the turn angle and adding deceleration lanes may improve safety somewhat but it does not address the root causes for the high number and severity of accidents. The root causes are dangerous lane crossings and high merge speed differences without acceleration lanes combined with multiple intersections in close proximity. Specifically, southbound traffic from New Hamburg turning on Oxford Rd 5 must cross a busy right-of-way high-speed lane of cars approaching from Tavistock at unabated speeds. The same high-speed lane of traffic must merge with a similar busy lane of traffic northbound from Oxford Rd 5. But this time vehicles must merge from a full STOP, limited visibility, uphill, in all weather and without an acceleration lane with traffic barreling through at high speed. Posting lower speed limits, one would think, would improve safety, but speed measurements show that the current 80km/h speed limit is exceeded by 80% of the cars by as much as 20km/h. On the positive side, the project proposes closure of two redundant intersections, which is good, but does not go far enough. East-west traffic and north-south traffic still must navigate multiple intersections in close proximity to reach the desired destination.



Option 1 – A 4-way STOP at intersection 1.

Currently at Punkeydoodles Corner a maze of six intersections redistribute traffic north, south, east, and west. Navigating those intersections is distracting and confusing and likely was a contributing factor in the most recent fatal accident. On closer analysis of traffic flow, it turns out that four of the six intersections are redundant and could be eliminated immediately with minor construction. Essentially a standard 4-way intersection at the location of intersection 1 and a second intersection east of Punkeydoodles Corner (intersection 5) is all that is needed to redistribute the traffic from and to New Hamburg (north), from and to Tavistock (west), from and to Woodstock (south) and from and to Huron Rd and Concession Rd (east).

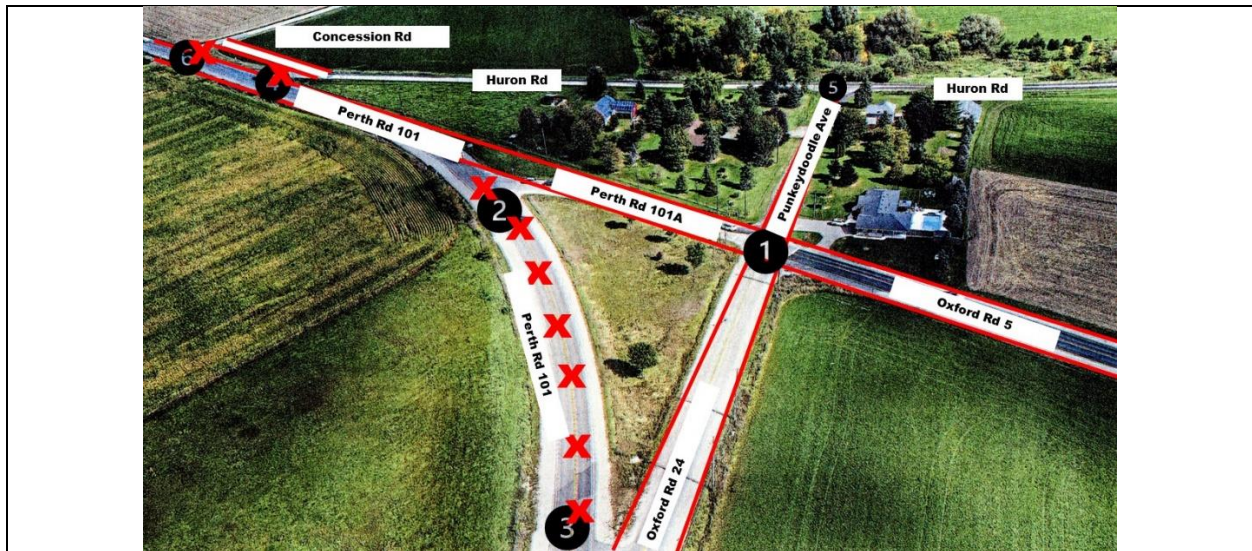


Intersection 1 can easily redistribute the consolidated traffic flow of about 1108 vehicles per hour during peak hours defined as AM and PM peak hour traffic and during busy hours on long weekends. Unfortunately, the traffic analysis only analyzed “peak hours” only and not total daily traffic volumes. Furthermore, it did not distinguish between cars, trucks, tractor trailers, and heavy equipment. This would have been relevant as Punkeydoodles Corner redistributes a high percentage of tractor trailers and tandem trucks including mini trains, that must cross busy lanes, in narrow turns, across multiple intersections in close proximity, e.g. barely further apart as the length of the rigs. Luckily, the peak hour traffic analysis does allow to estimate the consolidated vehicle count per hour (vph) for a single intersection as follows:

- The North leg is used by peak 500 vph from and to New Hamburg via Perth Rd101.
- The West leg is used by peak 354 vph from and to Tavistock via Oxford Rd 24.
- The South leg is used by peak 200 vph from and to Woodstock via Oxford Rd 5.
- The East leg is used by peak 54 vph from and to Huron Rd & Concession Rd

Construction Requirements

As projected onto the aerial view below, Punkeydoodles Corner could be reduced to a single 4-way Intersection with the following minor adjustments:



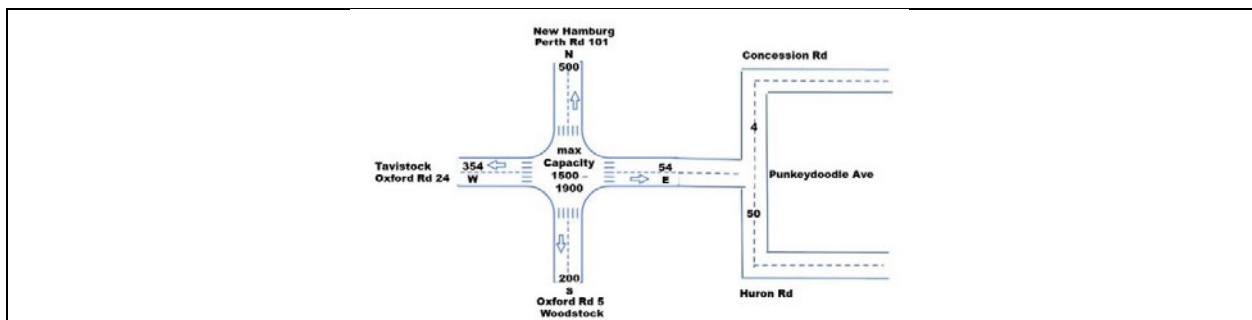
| | Option 1 4-way STOP | Option 2 Roundabout |
|-----------------------------|---|--|
| Perth Rd 101 | Realign as a straight line into Intersection 1 (north leg) | Sway realignment slightly to the west to accommodate perpendicular entry and exit lanes for a roundabout |
| Perth Rd 101A | Becomes part of Perth Rd 101 | |
| Oxford Rd 24 | Leave as is straight into intersection 1 (west leg) | Modify approach to accommodate entry and exit lanes for a roundabout |
| Oxford Rd 5 | Leave as is straight into intersection 1 (east leg) | Sway realignment slightly to the west to accommodate perpendicular entry and exit lanes for a roundabout |
| Punkeydoodles Avenue | Leave as is straight into intersection 1 (east leg) | Extend a bit to the west to accommodate entry and exit lanes for a roundabout clear of private driveways |
| Intersection 1 | Design as 4-way STOP or traffic lights | Replace with roundabout |
| Intersection 5 | Leave as intersection to join Huron Rd and Concession Rd to Punkeydoodles Ave. | |
| Intersection 2 | Remove both intersections incl. part of Perth Rd 101. Close off both intersections to Perth Rd 101. Connect Concession Rd directly to existing Huron Rd extension. All eastbound traffic ends up at Intersection 5. | |
| Intersection 3 | | |
| Intersection 4 | | |
| Intersection 6 | | |

Possible Traffic Controls for Intersection 1

Currently with 300 vph, the north-west axis is the busiest, which may explain the desire to keep Oxford Rd 24/Perth Rd 101 a through road. However, since Oxford Rd 5 was paved, traffic on the north-south axis has grown disproportionately more. Currently with 200 vph, the north-south axis (Oxford Rd 5/Perth Rd 101) is almost as busy as the north-west axis, which would explain why only one axis can be a through road. However, traffic flow at Punkeydoodles Corners is not just a fork in the road of two merging roads. There is a third axis, east-west. Currently used by 54 vph travelling east west in both directions. Therefore, the only way to avoid two intersections in series (intersection 1 & 2) is by creating a 4-way intersection.

The most logical four-way intersection to use is Intersection 1. Designed either as an all-way STOP, a north-south through way intersected by an east-west two-way STOP, or as a traffic light-controlled intersection.

- **Traffic lights** with dedicated turning lanes and signals with variable cycle lengths could significantly improve traffic flow efficiencies in favor of dominant traffic axes, e.g. north-west. However, current total traffic volumes (not just peak traffic flow) may not meet provincial minimum traffic flow to justify traffic lights. Further clarification is needed.
- **Two-way STOP:** Making the north-south axis (Perth Rd 101/Oxford Rd 5) a through road intersected by the east-west axis as a two-way STOP may be an option, because only 54 vph use the east-west axis, whereas 200 vph use the north south axis. In this configuration, the 300 vph southbound on Perth Rd 101 could also turn west without a STOP but the 300 vph eastbound on Oxford Rd 24 turning north would have to give way to the 200 vph barreling through to the north on Oxford Rd 5.
- **All-way STOP:** The maximum capacity of a four-way STOP intersection is 1500-1900 vph. Based on the traffic flow study the peak traffic volume at intersection 1 would be about 1108 vph. **Of the 500 vph from the north;** 300 vph would turn west and 200 vph would go straight south; **of the 354 vph from the west:** 300 vph would turn north and 54 vph would go straight east; **of the 200 vph from the south,** most would go straight north; and **of the 54 vph from the east,** most would go straight west. Additional safety features to increase traffic safety could include warning **ripples** in the road, **flashing LED lights** integrated in the stop signs and **streetlights** to illuminate the intersection at night.



Option 2 – A compact single lane roundabout in place of intersection 1

Unfortunately, the feasibility study failed to look seriously at roundabouts. Yes, three locations for a roundabout were proposed, but they all had the same flaws: a) they were conceived as roundabouts with only three instead of four on/off ramps delegating the east-west traffic axis to a second intersection in series; b) all three were designed as high-speed roundabouts with elaborate on/off ramps; c) in all cases the proposed location was along the steepest section of Perth Road 101, requiring major construction to create a level roundabout. Therefore, the conclusion that a roundabout is not feasible because of cost and extended planning requirements did not surprise. However, and this was also expressed by the opinion expressed of a majority of the attendees at the Tavistock public meeting, was that a four-way roundabout in the right location would be the safest, the most effective, the least intrusive, and therefore the most desirable solution.

Certainly, a compact urban roundabout could handle the 1108 vph peak traffic flow at intersection 1. The dimensions of such a design can be as little as 40 meters in diameter and can handle 1800 vph in the circuit at maximum capacity with only a single lane as long as the number of vehicles at any exit does not exceed 1200 vph. Such a roundabout was recently completed at the intersection of Appleby Line (Reg.Rd.20) and Britannia Road in Burlington at a cost of \$1.8 million dollars.

This is one million dollars more than the estimated \$800'000 dollars earmarked for the proposed temporary fix to re-align Perth Rd 101 and Perth Rd 101A. I would agree that there is some urgency to find a temporary fix for Punkeydoodles corner as soon as possible. Therefore, if funding for a roundabout cannot be found timely, why not build a four-way STOP in the center of the future roundabout instead of realigning Perth Rd 101 and Perth Rd 101A. That way the investment would reduce the price for a future roundabout rather than be a complete loss.

