



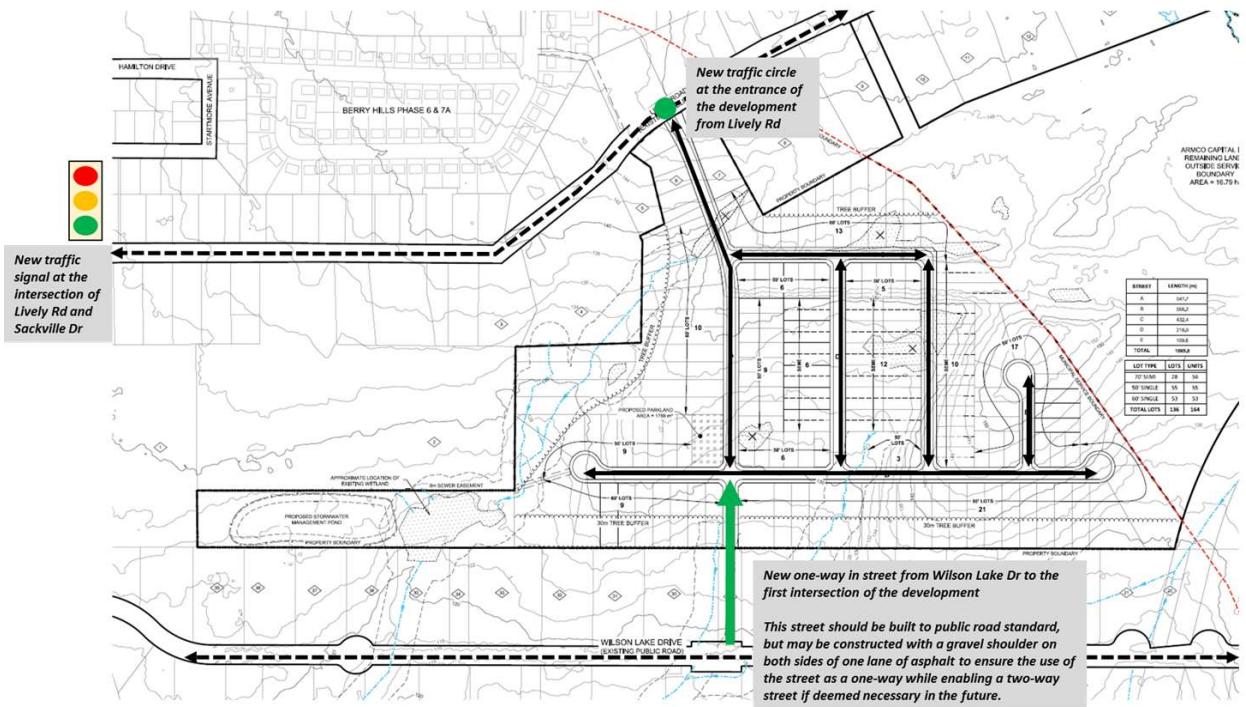
December 12, 2019

Marc Ouellet MURP, Director of Land Development
145 Hobsons Lake Dr., Suite 400
Halifax, NS, B3S 0H9

**RE: Traffic Impact Study Addendum
Berry Hills Phase Eight**

Dear Mr. Ouellet:

I produced a report dated August 28, 2019 titled *Supplementary Traffic Study: Berry Hills Phase 8*. Following a review by HRM staff, you, I and Laura Masching met with staff to discuss the findings. That discussion raised several issues that required further clarification. In a follow-up email, the lead planner, Stephanie Salloum documented those issues and provided the diagram below. With this letter, I will provide what clarification I can to these issues and ask that you forward it to HRM staff as part of your development application.



BROADENING THE SIGNAL WARRANT ANALYSIS

The original document included an assessment of the warrants for signalization of the Lively Road at Sackville Drive intersection. The results were provided in the table below.



Scenario	Signal Priority Points
2018/19 without development	55
2024 without development/high redistribution	66
2024 with development/high redistribution	103
2024 with development/low redistribution	89

Further clarification of what the high and low redistribution scenarios were should have been provided. Both scenarios assumed that the development site would be connected to Wilson Lake Drive with a one-way street so that site-generated traffic could exit only via Lively Road, but enter by either Lively Road or Wilson Lake Drive. The redistribution scenarios cited recognized that existing background traffic would be attracted off of Wilson Lake Drive and Rosemary Drive and onto Lively Road due to the improved ability to access Sackville Drive through a signalized intersection. Since the degree of redistribution relies on assumptions based on how many drivers would choose the benefit of signals over a shorter travel path, I felt it would be beneficial to provide a range of possible redistributions to test the robustness of the recommendation that signals would be warranted. The upper and lower assumptions that I chose are shown in Table 3 in the report.

It was requested by HRM staff that a scenario where the connection of the development site to Wilson Lake Drive by a two-way street also be provided in the analysis. Inclusion of this scenario (for both high and low redistribution) is shown in the table below. While the study assumed that the percentage of the traffic entering the development site would be 70% via Wilson Lake Drive and 30% via Lively Road, a 50-50 split was assumed for traffic exiting the site, taking into account the attraction of using a potentially signalized intersection. As expected, the warrant for signalizing the Lively Road intersection is reduced once a significant portion of the exiting traffic is permitted to use Wilson Lake Drive via a two-way street.

Scenario	Redistribution Scenario	Connector to Wilson Lake Dr	Signal Priority Points
2018/19 without development	n/a	n/a	55
2024 without development	High	n/a	66
2024 with development	High	One-way	103
2024 with development	Low	One-way	89
2024 with development	High	Two-way	86
2024 with development	Low	Two-way	75

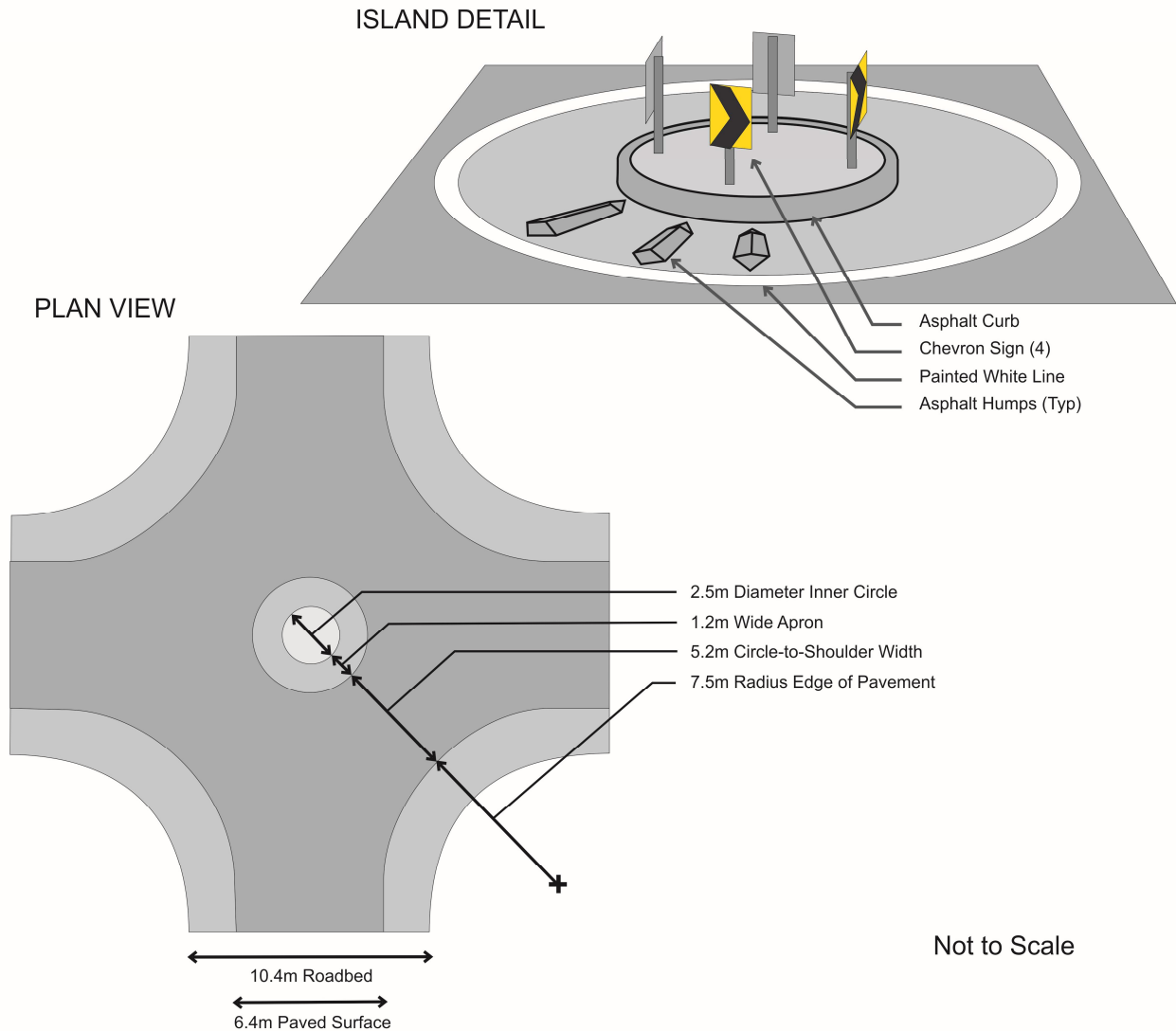
Note: All redistribution scenarios assume signals are in place, whether warranted or not

TRAFFIC CALMING ON LIVELY ROAD

HRM suggests that traffic calming measures may be necessary when two-way daily traffic volumes on a local street exceeds 3000 vehicles. Since the focus of the study was on intersection performance, daily traffic volumes within the study area were not measured or modeled. Nevertheless, multiplying the sum of the morning peak hour and the evening peak hour by a factor of five has generally been found to be a good proxy of daily volumes. The modeled volume for the sum of the hourly peaks on Lively Road at the Sackville Drive intersection is approximately 1000 for the worst-case scenario (full development, one-way street, high redistribution). This translates to a daily volume of approximately 5000. In comparison, the existing sum of the peak volumes is approximately 400, making the expected current daily volume about 2000 vehicles.

This daily volume warrants the consideration of traffic calming measures on Lively Road. Speed humps are already present on Lively Road and additional measures may not be required. HRM staff have suggested that a mini-traffic-circle at the intersection of the development site access road and Lively Road may help to supplement the traffic calming effect provided by the existing speed humps. At the request of the

Municipality, and recognizing that it has no standard for such a device, a conceptual sketch of a mini-traffic-circle at a local-local intersection has been provided below. The interior circle is only 2.5 meters in diameter, but an apron with radiating raised humps (or “ribs”) is added to increase the effective diameter of the circle without physically hampering the movement of larger trucks. The curb-to-shoulder width of 5.2 meters that results is well above the minimum of fifteen feet suggested by NACTO guidelines for facilities of this type.



We have found, however, that this type of intersection control can not be effectively implemented at a T-intersection, as is the case at the development site connection to Lively Road. The design relies on through traffic migrating onto the cross-street approach and this is not possible when one of the intersection legs is missing. As there are no four-leg intersections on Lively Road, this is not a good device for traffic calming.



DESIGN OF THE CONNECTOR STREET FROM WILSON LAKE DRIVE

The layout of the street that will connect the development site to Wilson Lake Drive is provided in Figure 3 of the study. It has all the features of a rural local street as specified in the HRM Design Standards, with the exception of the paved surface width. On the north side of the street, the standard edge of pavement has been retained, but extended across the roadbed by only 5.0 metres instead of the normal 6.4 metres. This is done to physically make the street appear as a single-lane one-way street westbound. Paving the street to its normal full width would make the street appear as a two-way street (despite signage to the contrary) or may encourage one-way traffic to treat it as a two-lane street with a driving lane and a passing lane. The crown of the street should remain at the centreline and conversion to a standard two-way street would simply involve paving the additional 1.4 metres.

I trust that this addendum addresses the issues raised by HRM staff. If any questions remain, I can be contacted by email at david.mccusker@wsp.com or by telephone at 902-256-2087.

Sincerely,

ORIGINAL SIGNED

David McCusker, P.Eng.
Senior Transportation Engineer
WSP Canada Inc.