

Critique of Proposals for Residential Development – Port Wallace

Revision No. 1 - By Doug Skinner, P. Eng. June 21, 2018

1.0 Introduction

Comments have been invited regarding development Proposals for Port Wallace on land owned by Conrad Brothers Limited (CBL) and Port Wallace Holdings Limited (PWHL)

On June 11, 2018 a critique was submitted to Andrew Bone of the Halifax Planning Department and the City Clerk, with request for distribution to all PPC members and Councillors. On June 14, I attended the PPC meeting but the members had not had an opportunity to review the comments. As a result, a review of these comments has been scheduled for the PCC meeting on June 28, with time allowed for a presentation. This Revision is significantly different from the original due to the latest information released from Planning. The original should be discarded.

On June 14, I received the following link to an updated document:

[Port Wallace Master Infrastructure Study, Urban Service Area Expansion, and Plan Amendment Request \(Case 21601\) - Mar 27/18 Regional Council | Halifax.ca - 180327rc1416.pdf](https://www.halifax.ca/sites/default/files/documents/city-hall/regional-council/180327rc1416.pdf)

<https://www.halifax.ca/sites/default/files/documents/city-hall/regional-council/180327rc1416.pdf>

This update was prepared by the City Planners and presented to City Council on March 21, 2018. It includes an updated **Master Infrastructure Study**, prepared by CBCL and dated January 2018.

This updated planning report consolidates many previous plans, expert reports and recommendations. However, it does not relieve the concerns of this writer or the citizens of Port Wallace who are aware of the many problems these projects may cause within our community including the legacy of problems that will endure. The key areas of concern include zoning changes, environmental, and transportation. This presentation will focus on zoning and transportation issues.

I am a professional engineer whose area of professional practice is outside of subjects that this discussion covers. The opinions should be considered as those of a reasonably informed lay person whose broad general experience and ability allows understanding of the issues and provides relevant insight.

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2.0 Executive Summary

2.1 Two major residential developments are proposed for the Port Wallace area. The population of Port Wallace is projected by the developers to be tripled by the 100% build of these projects, increasing by 10,780 over its present 5000. The Port Wallace population post-development will exceed the current population of the town of Truro. The population density of the new developments will be in excess of 50 persons per hectare compared to approximately 11.5 persons per hectare in the existing developed areas of Port Wallace/Westphal that compose the study area. **This critique has found that roadway capacity and traffic projections indicate that this area is not suitable for a development of this population density and that the transportation system has no modification options available that can safely provide capacity beyond 50% build.**

2.2 The Planning Report states that, based upon the CBCL Infrastructure Study, existing roadways with very minor changes, have capacity to meet the projected peak traffic levels at 50% build of the proposed developments. At that time the population of the study area will be double its present level. Residents of Port Wallace who travel Waverley Road cannot believe that there is significant capacity remaining in the road system, and they are correct.

2.3 In its analysis of existing capacity, the CBCL Study fails to capture the existing traffic level on Braemar Drive. It fails to recognize that the only available routes connecting this community, Braemar Drive/Waverley Road, Highway 107, and Main Street/Caledonia Road, are already near their ultimate capacities and assumes extra capacity that does not exist. It fails to discount the capacity of the Waverley Road caused by its sub-standard shortfalls for a major collector. It does not recognize that Highway 107 twinning will be required to contribute capacity long before 50% build.

2.4 CBCL does not report detailed external traffic flow projections beyond 50%, underestimates future traffic levels, and overestimates the additional capacity of existing roadways and their potential to gain capacity with future modifications. This predicts an unrealistically small impact on the existing community and reduces share of infrastructure costs to be borne by developers.

2.5 The planning report and its supporting consultant reports focus on 50% build traffic levels and do not offer solutions for the 100% build situation. **Beyond 50% build, the traffic congestion will be a major problem with no options identified for improvement. None exist or can exist as all available roadways serving the community will have reached their ultimate limit.** These facts must be addressed now.

2.6 The developers and planners are heavily invested in these proposed projects and will find it difficult to accept the reality of this traffic capacity shortfall and its long term effects on the community. No study to date appears to have identified the problems. This community is presently served by a network of roads that are near capacity and not to standards recommended to serve as major collectors. They cannot safely accept the imposition of

additional traffic that these developments would produce. Assuming that Highway 107 is widened to four lanes in the section from Montague Road to Highway 118 and all planned access upgrades are performed, the capacity will be inadequate to safely maintain the projected traffic rates beyond 50% build, and possibly less than that .

2.7 There is an apparent lack of communication or coordination between the City and NSTIR in terms of reaching agreement and commitment to provide an integrated and modernized roadway system that will have capacity to safely accommodate the projected traffic peaks.

2.8 The project planners have abandoned or dismissed a direct route to Highway 107 in favour of using Waverley Rd. as its major collector. Waverley Road is not built to the standard required for a major collector. It will soon be over capacity and unsafe if the projected peak traffic levels are imposed upon it as projected for 50% build. Access to Waverley Road between Breeze Drive and Montague Road should be minimized or eliminated. The PWHL development requires a direct access to Highway 107 at initial development.

2.9 A new traffic survey and analysis should be undertaken to provide critical information missing from the 2017 CBCL survey. Its scope should be expanded to evaluate the effect on Highways 111 and 118. The computer model should be used to generate detailed graphics of current conditions and of traffic peaks at 50% and 100% build.

2.10 No permits or approvals should be issued until the ultimate safe transportation capacity is realistically determined. Proposals should be adjusted to keep traffic within that capacity, with allowance for background growth, which will include the CBL industrial development.

3.0 Recommendations

Planning for the proposed developments is advanced and all parties involved are highly invested. The developers will oppose any effort that will cause delay or change to their plans as this will delay return on their investments. The city planners are eager to proceed with areas for future affordable residential expansion. It is important that all proponents give sober second thought to the needs of the transportation solutions that will serve adequately until full build out and make all changes necessary to ensure that the present and future residents of Port Wallace are served by an adequate and safe road system..

3.1 It is recommended that a new traffic survey and analysis be completed in mid September when traffic returns to post-summer levels. This re-survey is necessary to correct the noted shortcomings in the May 2017 survey, establish correct existing demands and capacities, and provide a model of realistic future external access traffic for 50% and 100% build.

The survey should be expanded to include:

1. All points monitored in the May 2017 survey
2. Addition of the Main St./ Major St. intersection and Maple Dr./ Braemar Dr. intersection.
3. Addition of the Parclo lanes serving Braemar Dr.
4. Analysis of capacity on the sections of highways 118 and 111 that will be impacted by increasing traffic.

5. Reconsideration of traffic reduction allowances.
6. Establishing reasonable capacity limits for existing roads in consideration of physical limitations, interruptions, and traffic/control change implications.
7. Include traffic projections for CBL Industrial Lands
8. Produce traffic flow charts showing routes and peak rates for a.m. and p.m. commute traffic for existing, existing at peak flow capacity, 50% build and 100% build.

3.2 It is recommended that no approvals be awarded to any phase of the project before the achievable transportation capacity has been determined. The transportation solution must be adequate to provide SAFE travel at the peak traffic rates projected for full build.

3.3 It is recommended that consultation and coordinated planning be undertaken with NSTIR as soon as modified capacities and demands are determined to promote and discuss

1. an interchange or direct route from PWHL lands to Highway 107
2. the suitability and capacities of traffic circles at Montague Road
3. the timing of the widening of Highway 107

3.4 It is recommended that the development plans be modified to reduce the population density of the proposed developments so that the full build traffic demand will not exceed developable capacity, once that capacity is determined. A detailed schedule of growth vs required changes should be developed and supported by detailed projections for each intersection and road section so that safe capacities are not exceeded at any time during the build.

3.5 It is recommended that the right turn lane from Waverley Road to Montebello Road be developed with haste so that its effect can be evaluated and the existing traffic situation can be improved. Early acquisition of land, if required, might eliminate future conflict if the building proposed for the southeast corner of the intersection proceeds.

3.6 It is recommended that CBL lands west of Highway 107 maintain their R-1 zoning status and that locations of the intersections with Waverley Road be reconsidered.

3.7 It is recommendation that an interchange or Wilcot Lane route from Avenue du Portage to Highway 107 be developed as a north-south corridor for Port Wallace and provide an alternate route paralleling the Waverley Road.

4.0 Response to Transportation Issues Arising from the Report Recommendations

This section addresses the recommendations of the planning department (in italics) and offers rationale for improvement.

1. Limited development in Port Wallace can take place without the need to upgrade any transportation infrastructure. The analysis indicates that up to 400 residential units can be built before upgrades are required at the Montague Road interchange. While the analysis indicates that upgrades would be required only at the southbound ramps intersection, it may be cost effective to upgrade the Waverley Road/Charles Keating intersection at the same time. Further input from Nova Scotia Transportation and Infrastructure Renewal (NSTIR) is required.

This comment appears unfounded except for the coordination requirement with NSTIR. Highway 107 is near or at peak capacity. Little benefit would be achieved by modifying these intersections until the 107 is twinned from Montague Road to Highway 118. The rework of intersections at Montague Road should be in concert with development of a direct highway access from PHWL lands.

2. A new connection to Forest Hills Extension is not needed. Many residents indicated that it is important to provide a new connection to the Forest Hills Extension while others questioned its effectiveness. The analysis shows that a right turn in right turn out connection to the Forest Hills Extension would only marginally improve traffic congestion on Waverley Road and other access points. The new connection would not eliminate the need to upgrade other intersections within the study area. A full connection to the Forest Hills Extension (i.e. roundabout or interchange) would be an improvement, but it too would not eliminate the need to upgrade other intersections. In addition, the NSTIR has not agreed to consider an at-grade roundabout connection.

Additional capacity on existing roadways is much lower than the CBCL report states. Twinning of Highway 107, and improved access to it, will be required very shortly after the build out begins. Braemar Drive and Waverley Road are near capacity and little increase can be expected before the Caledonia Road route reaches its maximum capacity. Before 50% of the build is achieved, traffic on Waverley Rd. between Montague Rd. and Breeze Dr. will be beyond capacity of that section. Serious issues surround the proposal to build 3 traffic circles to resolve traffic congestion at the Montague Rd. intersection with Waverley Rd. and Highway 107. This project requires access to the 107 beyond that which can be safely imposed upon the existing traffic on Waverley Rd.

3. The widening of Forest Hills Extension is needed without the Port Wallace Development. The two-lane section of the Forest Hills Extension, from Montague Road to Burnside, is currently at or near capacity during the morning and afternoon rush hour periods. Transportation modelling indicates that this section of highway will need to be widened to accommodate growth outside of the Port Wallace master plan area. The analysis assumes that Forest Hills Extension, from Montague Road to Burnside, will be widened to four-lanes by 2031. To date, NSTIR has not committed to this time frame and will only confirm that upgrades to the Forest Hills Extension are not included in its current five-year capital plan.

It is agreed that little or no capacity exists on the section of Highway 107 between Montague Rd. and the 107. The proposed developments will need to access capacity from the Forest Hills Extension (Highway 107) at initial stages of the build. This requires that twinning of the section of the 107 between Montague Rd. and Highway 118 be undertaken with the initial phase of the development. If a high percentage of the additional capacity gained can be applied to serve these projects, the additional traffic might be accommodated for close to 50% of the build. After 50% build no combination of proposed changes will be able to safely accommodate the traffic demand. There is no long term solution to the resulting traffic congestion. This is underplayed in the CBCL infrastructure report which presents detailed analysis for external traffic patterns only to 50% build, which they estimate to occur in 2031, although the CBCL estimate of available external capacity is believed to be seriously underestimated. No solution for external access route capacity beyond 50% build has been identified.

There seems to be little concern by Planning or CBCL for the ultimate traffic situation that will develop with the second half of the build and no solutions are offered. Approval of this project with population levels as stated will leave a legacy of traffic congestion for which there is no current solution or future solution and which can never be fixed.

4. Braemar Drive/Waverley Road does not need to be widened. Previous studies have concluded that the section of Waverley Road/ Braemar Drive, south of Montebello Drive, would need to be widened to four-lanes to accommodate the Port Wallace development. The 2009 Cost of Servicing Study (CBCL 2009) concluded that the section south of Maple Drive would need to be widened to accommodate a population increase of 6,000 persons in the area, and that the section south of Montebello Drive would need to be widened to accommodate a population increase of 30,000 persons. The 2014 Pre-Design Baseline Study (completed by Municipal staff) also concluded that the section south of Montebello Drive was near capacity and that the traffic signals at Montebello Drive were at capacity. Improved modelling techniques and better data collection now suggest that Waverley Road/Braemar Drive does not need to be widened to accommodate the Port Wallace development. The Waverley Road/ Montebello Drive intersection will need a new northbound right turn lane and traffic signal upgrades. This analysis assumes that Forest Hills Extension will be widened by 2031. If the Province does not widen Forest Hills Extension, modelling indicates that there will be a shift in traffic to this section of Braemar Drive/Waverley Road. It would increase traffic congestion but would not warrant widening.

It is agreed that Braemar Dr. widening, (which has now been removed from the project plan and which will no doubt be revisited when it is discovered that there is no traffic capacity available anywhere beyond 50% build) would provide small benefit to traffic capacity. The Braemar Drive traffic was not measured or considered in the CBCL traffic analysis. Braemar Drive does not have significant capacity remaining.

5. A proposed road crossing of Barry's Run is desirable, but is subject to further analysis. A proposed road crossing of Barry's Run allows for better transit routing and integration of the development. . Modelling indicates that without this crossing, traffic would shift to the section of Waverley Road just north of Breeze Drive. Commuters will continue to use the Montague Road interchange as the main access point to the development.

The 2016 Land Suitability Analysis identified the wetlands surrounding Barry's Run as significant environmental and cultural asset that should not be developed. The wetlands are also potentially contaminated due to the historic gold mining operations. Nova Scotia Environment (NSE) is currently being consulted to assist HRM and Halifax Water in understanding how to address the extent of potential contamination of Barry's Run and the implication to any road crossing. Any proposed bridge crossing will need to have enhanced environmental protection measures. This aspect is discussed in greater detail later in this report.

There is full agreement with the environmental comments and recommendation for the Barry's Run crossing to relieve traffic on the Waverley Rd. It is further suggested that there is an essential and urgent need for direct access from the PWHL lands to Highway 107 be provided through the addition of an interchange or a route that uses Wilcot Lane. This is required to keep traffic levels manageable on Waverley Rd. It is interesting that this recommendation states "Commuters will continue to use the Montague Road interchange as the main access point to the development" while recommendation #3 concedes that there

is little or no capacity remaining on Highway 107. Highway 107 must be twinned as the project is initiated.

6. The Main Street at Forest Hills intersection is at or near capacity. The Main Street at Forest Hills Drive intersection is one of the busiest intersections in the municipality and is currently at or near capacity. The long-term solution for this intersection is the Cherrybrook Bypass which will divert traffic away from Main Street to Highway 107. NSTIR staff will not commit to a time frame for this project and will only confirm that the Cherrybrook Bypass is not included in their current five-year capital plan. In the interim, there are limited options to provide relief to this bottleneck. One option considered was a multi-lane roundabout. Converting this signalized intersection to a roundabout will be expensive because existing traffic will need to be accommodated during construction. Preliminary cost estimates are in the order of \$7 to \$10 million. Modelling indicates that only a small percentage (2 - 5%) of Port Wallace traffic will use this intersection. The potential developer capital cost contribution ranges from \$140,000 to \$500,000. The trigger for this project will be growth east of this intersection. Given this uncertainty and the small CCC, this project is not included in the Infrastructure Master Plan costs.

The comment regarding the intersection being at capacity is correct. Improvements to Highway 107 are in the realm of NSTIR. The project should be planned and costed for solutions to meet capacity at 100% build and the developers share for the improvements for required interchanges should be identified and applied to them as real cost of these developments rather than burdening existing and future taxpayers.

5.0 Conrad Brothers Limited Lands Proposed Subdivision

The proposed CBL housing development is on a 50 acre site located between Highway 107 and the Waverley Rd., north of the Montague Rd. intersection: This land (except for a portion close to the Montague Rd. intersection) is, (and has been since 1961), zoned R-1 (single family residential) as are the adjacent and nearby lands on the Waverley Rd., Lake Charles Dr., and Craighburn Subdivision. Rezoning this land to allow multi-family buildings and affordable housing is inappropriate to the neighbourhood and will make a disproportionate contribution to traffic. If the existing proposal is to proceed the population of this small area could be 1728 at 3 persons per unit. It should remain R-1 with a population density equivalent to the adjacent neighbourhood. A lower density layout with single family homes would suit the neighbourhood, allow better flexibility for layout and access, minimize storm water impact, allow more green space, and contribute less traffic to the transportation system. Similar comments are appropriate to the PWDL proposal.

Transportation issues specific to this section are also concerning. The access to the aforementioned area, as shown on the preliminary plans, is from internal streets connecting to the Waverley Rd. at two points. The access from Waverley Rd. south of Lake Charles Dr., as proposed, is dangerously close to the long curve north of the Montague Rd. intersection and the proposed road meets the Waverly Rd at an oblique angle. A former Dartmouth City Engineer advised me that side streets should meet a main road at right angles. A road has been rough-cut closer to Lake Charles Dr. but it is not in the location shown on the drawing. The location of the rough-cut road is further from the curve and might provide adequate visibility. This needs to be confirmed by traffic engineers. The second access to the new subdivision is

about one kilometer closer to Waverley. This location is within a series of gentle curves and will provide poor visibility for exiting vehicles unless the sight lines are improved.

No connection is shown within the development to allow its residents to reach the proposed commercial section next to the Montague Rd. without first exiting to Waverley Rd. The commercial development access is unclear and it will be in conflict with the busy intersection which already includes the Montague Road (collector for highway 107), Waverley Road., Charles Keating Drive and Wilcot Lane. A major upgrade of this intersection is anticipated to accommodate traffic from the nearby proposed PWHL development.

6.0 Transportation /Traffic Issues

This section will address the additional population and the traffic that it will generate/. Specific areas of roadway where problems are expected, and/or changes proposed, are discussed.

6.1 Predicted Increase to Population

The PWHL development and the CBL development, will together have a total of **3744 housing units** (ref. CBCL report 2.6.1). The population increase at full build is projected to be increased by a "population equivalent" totaling 14,921 persons. If the 4,163 population equivalent for the industrial portion of Conrad Lands is deducted, this leaves a **full build increase to residential population of 10, 758** (avg. 2.9 residents per unit). .

The existing population of Port Wallace, including Westphal west of Main Street, and South of Highway 107 was estimated By Paul Burgess, P. Eng. in his report of 2014 to be 4711. This would place the present existing population in the range of 5000 persons. With the addition of the 10,758 residents Port Wallace would have a population of **16,000** by full build of the proposed developments. Compare this to the 2011 population of Truro N.S. at 12,059.

At even half build, the total population would be over 10,000, nearing the 2011 population of Truro.

The CBCL infrastructure report considers an area of 385 hectares, or 1.5 square miles. This includes the CBL Industrial Area. Previous reports claimed the totals of 50 Acres for the CBL Residential Development and 500 acres for the PWHL development which totals 550 acres for residential. These approximate areas have been confirmed by a google earth check. This 500 acres of PWDL land includes upwards of 20 acres of undevelopable wetlands. The residential developments will be built on a net of approximately 530 acres which also includes internal retail and institutional. 530 acres is equivalent to 215 hectares or 0.83 square miles. At 100% build that is 50 persons per hectare.

6.2 Population Density Comparisons

Truro has a land area of over 13 square miles (3367 hectares) or 3.6 persons per hectare which means that this area will be almost 14 times more densely populated than Truro.'

The existing developed area of Port Wallace bounded by the Shubenacadie Canal system, Highway 107 and Main St is approximately 500 hectares and is home to approximately 5000 people. It includes a mix of high density and single family dwellings as well as schools, churches and some retail. The population density of its developed area is approximately 10 persons per hectare. The proposed developments will have about five times the existing population density.

6.3 Baseline Traffic Data

The CBCL report presents, and has projections developed from, a traffic survey performed in May 2017. A previous traffic analysis report prepared by Paul Burgess in 2014 reported peak hour p.m. traffic on Braemar Drive to be 1700 VPH (vehicles per hour). That traffic rate is over the safe capacity of that section of road. The data that CBCL acquired ignores Braemar Drive which seems a major flaw. A major collector, previously reported at a rate that is over capacity, has not been considered.

The southern boundary of the CBCL study is the intersection at Waverley Road and Montebello Drive. The p.m. commute traffic from Waverley Road is measured as it enters the study area through this intersection continuing north on Waverley Road or turning right on Montebello Drive.

The aforementioned measuring point misses a significant p.m. traffic flow that occurs as traffic heading north on Braemar Drive / Waverley Road turns before the intersection at Montebello Drive. The excluded traffic includes vehicles exiting to Maple Dr. which is a route used by many Westphal residents during the p.m. traffic peak to avoid traffic delays on Main St. and the busy left turn to Major St. from Main. Similarly, p.m. commuters use Mic Mac Drive combined with Bonita Drive. and Rossi Drive to Montebello Drive, short cutting the heavy traffic at the approach to the Montebello intersection where they would turn right "normally". **At p.m. peak hundreds of VPH use this route through quiet residential streets. It has been reported that a local citizens group has lodged complaints with police, their councillor and planning regarding this situation.** Eight other streets and numerous business and private driveways also receive traffic from Braemar Drive and Waverley Road prior to the Montebello intersection.

The CBCL traffic data captures the traffic patterns *within* the study area but it fails to identify the very limited remaining capacity in the three external access routes available to the area.

The difference between the peak Braemar Drive traffic reported in 2014 r by Paul Burgess and the peak measured by CBCL at the Montebello Road intersection is $1700 - 933 = 767$ VPH. This difference implies that the traffic entering the CBCL study area may be significantly higher than the 933 indicated.

More significant is that **Braemar Drive, a major route, is confirmed to be at or near capacity.**

A new traffic study should be performed with data gathered from all significant points that engage traffic to and from the study area. The study area should include the full area served by Braemar Drive.

If the baseline traffic data is adjusted to capture Braemar Drive, the existing peak flow into the study area from all routes during the p.m. commute would be as follows. The Braemar Dr. traffic has been reduced from the Burgess report by half of the 767 VPH peak difference to ensure that this is conservatively stated.

Braemar Drive	1317 VPH
Highway 107	165 VPH
Caledonia Rd.	462 VPH
Waverley Rd.Sbound	<u>87 VPH</u>
Total	2031 VPH

It is further estimated that remaining capacity in these external access routes, with minor improvements by adding turning lanes and improving traffic signal controls, can be:

Braemar Dr.	182 VPH
Highway 107	0 VPH
Caledonia Rd.	150 VPH
Waverley Rd.Sbound	<u>N/A</u> Demand on this section will not increase.
Total	332 VPH

6.4 Projected Traffic Increase

The CBCL traffic study does not provide details of external traffic routing at peak volumes beyond 50% build.

The CBCL Study states that the peak traffic flow generated by the 10,758 population increase will add 3400 trips during morning peak hour and 4200 trips during the late afternoon peak. These numbers have been discounted using assumptions that approximately 28% of those trips will not add to the traffic. The additional peak hour trips numbers were adjusted to 2450 VPH a.m. (-28% reduction) and 3050 VPH p.m. (-27%reduction) for use in their traffic projections

Typical Trip Reduction Rates That Have Been Applied

Internal Trips	10%
Walking/cycling mode share	3%
Retired residents	2%
Transit mode share	7%
Retired residents	2%
Working from home	5%
Total	27%

This is based on assumptions that are unproven and behaviour patterns that have not been historical in this area. This tends to give a lower than probable peak traffic demand but no contingency is provided to offset risk of overestimating the trip reduction factors.

Paul Burgess noted in his 2014 study that public and active transportation have little impact in areas such as this and cannot be expected to be extensively used. Bicycling is seasonal in our climate and has not had significant use by commuters in the study area. Transit use could increase as population increase could drive the development of new routes and higher service frequency so the 7% is accepted.

The internal retail and institutional developments are projected by CBCL to reduce peak commuter traffic by 10%. This number is questionable. While this factor will have an effect on total external trips, it will not be nearly as significant to commute peaks since the internal services will be expected to employ far less than 10% of the population's workforce and visits to retail and institutional sites will usually occur outside of peak commute hours..

It is proposed that it would be reasonable for bicycling/walking reduction to be reduced to 1% and internal trip reduction be reduced to 5%. That would project a net total reduction at 20% and would change the peak totals significantly.

For purposes of this critique the reduction total has been left as presented.

The CBCL traffic projection is at the low end of possibility. Its report suggests that an additional population of 10,780 (+210%) will generate an increase in peak traffic from its existing 2030 VPH + 3050 VPH to 5081 VPH. (+150%).

The CBCL projection for 2031, which is equivalent to 50% build, is a 1950 VPH increase for p.m. peak. There are but three routes to serve this need, all of which are at or near capacity. The available capacity of existing roads with addition of turning lanes and improved traffic signal control is estimated at (without widening Highway 107) about 332 VPH. If this is compared to the 50% built out traffic peak, it is seen that the traffic meets the capacity of the existing system when the build-out is at about 17%. If Highway 107 is twinned and the improvements at Waverley/Montague are completed, the additional 1600 VPH capacity will be almost totally required to satisfy the demand to 50% build (1617 VPH) but that assumes that no additional traffic will be generated on the 107 by developments to the east.

At less than 50% build, the proposed projects will cause traffic to increase beyond the maximum safe capacity. From that point on, no options for capacity increase will be available, meaning that **at 100% build, a projected 1100 VPH demand cannot be safely satisfied**. Note that these numbers are conservative projections using a compromised peak flow assumption for Braemar Dr. and optimistic projected traffic reduction factor of 27%.

If the traffic reduction factor was adjusted to 20% and existing Braemar Drive capacity was considered as NSTIR reported, the transportation system would overload at an estimated 5% build and would exceed the capacity of the expanded Highway 107 at about 45% build. **Accurate and confident traffic projections can be made only after revising the traffic survey and analysis.**

6.5 Braemar Dr. to Montebello / Waverley Rd. Intersection

Previous traffic studies proposed that the Braemar Dr./ Waverley Rd. section be widened to 4 lanes. Land expropriation and possible removal of existing residences would have been required with major compromise to residential properties and businesses. No determination was made as to whether the capacity thus developed could be handled by the Parclo. This concept has recently been removed from the development strategy.

The Montebello Dr. intersection is reported to be operating at capacity. The report proposes to improve the capacity by upgrading the signals and adding a right turn lane at Montebello Drive. It has been stated that land is available to allow a turning lane to be added.

While the addition of a turning lane will increase capacity for the evening commute, it will have no benefit to morning capacity as most cars leaving Montebello turn left to go south. The delays caused by traffic light changes and crosswalk use will make it difficult to gain significant a.m. capacity. An outstanding development proposal for an apartment building at this intersection will further complicate traffic at this point and limit the ability to expand the width of the roadway.

Traffic capacity can be determined for ideal or standard conditions and then adjusted for the influence of road layout, terrain, intersection spacing, interruptions and traffic flow conditions. Morning flow might become congested at a lower VPH rate than the evening flow in a circumstance such as the Waverley Rd./ Montebello Dr. intersection where a right turn will be facilitated by adding the turning lane but no increase in a.m. peak capacity turning left from Montebello can be gained as this will still require a left turn through the traffic signal. As morning commute traffic levels continue to increase, traffic turning south from Montebello will be competing with traffic travelling south on Waverley Rd. to gain access to the dwindling capacity.

As a two lane major collector road, Braemar Drive/Waverley Road. would have a theoretical maximum capacity of about 1500 VPH in both directions, at 50KPH. **The reports acknowledge that this section does not meet the standards for a major collector.** The practical safe capacity is reduced by several factors including weather, closely spaced intersections, uncontrolled intersections, crosswalks, left turning vehicles, driveways, active transportation lanes, and stopping city and school busses. The CBCL report suggests that 1250 VPH be considered a reasonable safe maximum rate for good conditions. The discussion in the previous section suggests that the p.m. peak rate already exceeds this. The morning commute capacity would be lower due to a higher number of left turning vehicles entering the traffic flow, many of them from uncontrolled streets and driveways.

The right turn lane at Montebello should be added as soon as possible to ease existing traffic and provide a real number as to the ultimate peak p.m. capacity at this location.

6.6 Caledonia Road

Caledonia Rd. capacity analysis has similar issues with uncontrolled access. A 3 way Stop sign at the intersection of Dunbarton Ave slows traffic. Recently, the Caledonia School zone speed limit has been reduced to 30KM per hour. Crosswalk use and stopping school busses reduce capacity and the presence of children is frequent during the p.m. commute due to nearby athletic facilities, playgrounds and Thomas More Church.

During the evening commute, most traffic entering Caledonia Rd. comes from intersection with Main Street, receiving traffic from Main St., eastbound (224 VPH) and west bound (74 VPH) , and Woodlawn Rd.(163VPH) totalling 620 VPH. All of these contributors could be expected to increase with residential growth.

The left turning traffic must share the signal time with the straight through traffic and left turn traffic from Woodlawn Road, the straight through and left turn traffic from Caledonia Road, and westbound Main St. through traffic as none of these can flow simultaneously. The total flow of competing traffic through that space is 1107 VPH, which can be discounted to 838 VPH because the inbound Main Street traffic is in two lanes. If 150 VPH is added, the effective total will be 988 VPH. All feeds to Caledonia Road from this intersection are single lane traffic. It is anticipated that p.m. peak traffic capacity increase of no more than 150 VPH on Caledonia Rd. traffic could be achieved due to complications with the intersection, crosswalk use, capacity/congestion on Main St., and inefficiencies caused when traffic signals change.

6.7 Highway 107 Montague Rd to 118

There is little, if any, capacity remaining on the 107 between Montague Road and the 118. The traffic study shows present peak at 1600 vehicles per hour with 130 VPH capacity remaining. If the 2 second gap rule is applied and the average vehicle length is 6 meters, the time to pass one vehicle at the 100 km limit is $2s + (6 / 28m/s) = 2.21$ seconds which safely allows 1630 vehicles per hour in ideal conditions. This section now reaches its capacity during the evening commute which is confirmed by observation. The proposed plan to widen this section of the 107 to 4 lanes can gain an additional 1630 VPH at peak but this capacity increase will need to be shared with vehicles coming to and from expanding communities to the east. The widening of this section by NSTIR is not anticipated for 10 years. It will be required at an estimated 5% to 10% of build.

6.8 Waverley Rd /Montague Rd./ Highway 107

The existing intersection at Waverley Rd., Charles Keating and Montague Rd. also involves Wilcot Lane and is very close the Highway 107 interchange where on and off ramps meet the Montague Rd. Further complication exists at the east end of the interchange where Cono Drive and Montague Rd. intersect. This area has been identified as requiring improvement with any significant traffic flow increase.

The solution suggested by CBCL is to add three traffic circles, one at Waverly Rd and Montague Road, one at the west end of the highway bridge and one at the east end of the highway bridge.

A preliminary drawing of the Waverley Road. circle shows that a number of existing homes on the west side of Waverley Rd. north of the intersection will lose their frontage to the Waverley Rd. This creates an access problem similar to that on Braemar Dr. near the Parco where the last few houses are semi-isolated. The plan does not accommodate Wilcot Lane, which has low traffic volume but enters in a difficult location. A single lane circle at this point would exceed capacity on the p.m. commute with about 1500 VPH sharing the section carrying Waverley

Road traffic south before 50% build. This suggests that development of a direct route to the 107 to serve PWHL lands would be the most appropriate solution to prevent congestion at this area.

A solution using Wilcot Lane as access to Highway 107 for northbound traffic from the PWHL development could allow this intersection problem to be resolved with less impact to Waverley Road.

A major concern is the proximity of the traffic circles to one another. This is a seldom seen configuration that would seem to add serious complication and potential for gridlock. The two circles for the on/off ramps have not been displayed but there is some doubt as to whether space is available to build circles large enough to accommodate the traffic flow which includes many large trucks. NSTIR input to this situation is essential.

Traffic circles are an inexpensive solution when well applied. They become obstacles when pushed past capacity. This does not appear to be a good solution to this area. While it would minimize the investment that might be required it would not present a satisfactory or good long term solution. The changes that are made to allow this development should be done such that the contributed cost by the developers is adequate to bring the highway system to a mature level so that the future taxpayers are not burdened with the expense of upgrading any hallway measures that were adopted to make the original project financially attractive.

6.9 Wilcot Lane and Waverley Rd.

Wilcot Lane is a residual section of Montague Road left isolated when the 107 interchange was developed. This road serves a few homes and one side street, Lynnwood Drive. It is not clear how Wilcot would be engaged with the proposed traffic circle. It was originally shown on the development plans as an access serving the north end of the Clayton Lands development. This has since been abandoned. It should be reconsidered as a potentially inexpensive and logical access point.

Wilcot Lane could be used for truck access to the site during infrastructure development, lot preparation and building, keeping these vehicles off the Waverley Rd. Wilcot Lane could provide access to the PWHL development with a more direct route to the 107 than the Waverley Rd. While there is presently capacity remaining in the section of Waverley Rd. between Breeze Dr. and Montague, there is no need to max it out when traffic patterns within the subdivision accessing Wilcot could be developed provide an enduring, safe and less disruptive solution.

Waverley Rd., although used as a major collector is not built to that standard. It has numerous uncontrolled access streets and driveways as both sides are lined with homes through the study area. The existing active transportation lanes and roadway are compromised by limited road width which has serious safety implications. The road is narrow with numerous curves, driveways and side streets.

Increasing traffic to the level that is suggested by the report is unnecessary and creates safety issues. Five new sets of traffic lights and a rotary are proposed from the north edge of the study area to Breeze Dr. This will cause delays for inbound and outbound traffic. **The new residential developments should not be imposing traffic on existing streets where safety is compromised. Better options exist. Access to Waverley Road should be minimized or eliminated between Breeze Drive and Montague Road.**

The traffic survey reports existing inbound traffic on the Waverley Rd. at 259 VPH during p.m. commute. By the time half build is reached, this will be carrying about 76% of the new p.m. peak traffic that has been generated from these developments, with 24% going to the CBL subdivision. That will be 0.76×1600 which is 1216 VPH, plus the 259 VPH background traffic that exists today. 1475 VPH is beyond capacity for this road section by about 475 VPH.

Waverley Rd. south of Montague Road runs out of capacity to transport the p.m. commute traffic before 50% build out. It is essential to develop another route to Highway 107 from PWHL lands through Wilcot Lane or a separate interchange

6.10 New Interchange on Highway 107

The best option to move traffic from the PWHL development to the 107 would be a separate interchange that could be accessed from Portage. This would allow the Montague Rd, interchange to function at a reasonable traffic, level similar to existing. An access through the new subdivision from Avenue du Portage would also allow traffic from the Montebello area easy access to Highway 107. **The Portage / Montebello north - south corridor to the highway would provide an option to the Waverley Rd., which is unsuitable for the traffic increases that the current plans imply.**

A major barrier to a new interchange would be cost of construction and land. The developer would (fairly) be required to pay a significant part of that cost. This is a real and legitimate cost of doing the development. Wilcot Lane might provide a less expensive solution at lower cost.

7.0 Solution

There is a solution available to this if action is taken before projects are approved or construction starts. Early change is paramount if these developments are to be completed without causing serious and irreparable harm to our community. Port Wallace is a great place to live and its residents do not want that to change.

As residents of this area we are asking ourselves: Why then do the developers want to build a community that has a population density much higher than anything surrounding? Could the profits from selling larger lots suitable for larger homes not meet profit expectations? Why should a new development be built when it cannot be completed without causing serious harm to an existing community?

The first step is to recognize that the existing road system is near capacity and the only route that can provide the capacity required as soon as the first phases of the PWHL development begins is a twinned Highway 107. Capacity will be exhausted before 50% build.

Larger lot size and lower population for these developments would improve the environmental footprint with more green space and a lower percentage of roof area to permeable surface, allowing better storm water absorption.

Our planners have an objective to reduce urban sprawl by maximizing population density. **It is clear that this area, while underdeveloped and somewhat close to the urban center, is trapped by existing and ancient roadways that are already operating near safe capacity and which have no options to improve to a level that can adequately serve the high density proposals.**

If these developments were changed to provide one third as many units and one third the population density, the traffic system, if improved as described, could meet future demands. That would be a sustainable and rational option. Approval of the project as proposed today will cause a myriad of traffic problems beginning at a low percentage of build and continually worsening. After 50% build, there is no solution. Port Wallace will become a less desirable place to live. Property values will fall and the overall character of the community will .spoil. **Whether ten, twenty, or thirty years to full build, the politicians, planners, and developers who would place this burden upon the existing and future community will have demonstrated indifference to the life quality of its citizens.**