Environmental Assessment - 5709.00
Ed Innes
For June 9, 2014

I am writing to you in regard to making a **representation against** the proposal:

CITY OF WINNIPEG – SOUTHWEST RAPID TRANSIT CORRIDOR – STAGE 2 - FILE: 5709.00

The grounds are:

1. Failure to make a full and proper environmental assessment consistent with modern Canadian standards, and to make such assessment publicly available.

2. Failure to make a full and proper professionally sealed transit passenger traffic assessment, and to make such assessment publicly available. This assessment is necessary for the completion of item (1), eg. GHG impacts.

3. Failure to present dependable evidence that the proposed system will work as planned or even of what that expected performance level is.

4. Failure to provide evidence of a Professional Engineering seal, in accordance with the Engineering and Geoscientific Professions Act, on relevant studies referred to in the project environmental assessment as justifications for the project.

In short, it is not possible, given these serious deficiencies, to know objectively what the environmental impacts of this project are.

This is important, because Winnipeg is an outlier among the largest 10 cities in Canada, in that it is the only city attempting to make a busway system the backbone of its transit system. Winnipeg is also an outlier in having reached this contrary decision through the poorest and sloppiest assessment process of all of these cities. In numerous cases, busway proponent public relations material is used in place of professional engineering.

Significant problems with the Ottawa busway system, which is the only comparable system in Canada, are completely overlooked. In fact, the Winnipeg consultants have misrepresented the Ottawa situation at public consultations, claiming that Ottawa is perfectly satisfied, despite public support for it being about 1%, despite Ottawa city council voting 24-0 to replace it with LRT, despite the tender being awarded, and despite the studies for replacing the next segment already being under way. It is being replaced with LRT due to congestion counterintuitively occurring in the face of poor ridership. The same problems with the Ottawa system are likely to occur here for the same reasons, negating most of the perceived benefits.

The fact is that this project is a boondoggle. This type of busway project has a history of failure that stretches around the world, where city after city once held out to be an ideal example of busway design is considering the abandonment or outright replacement of busways with rail systems. It is likely that a litany of issues uncovered in other jurisdictions would surface if proper professional studies were performed.

It is also likely that such professional studies, if undertaken, would conclude that a superior option is a streetcar or LRT line in the centre boulevard of Pembina Highway, right where the streetcar line used to be. Such a line would cost less, attract more riders, have higher passenger carrying capability, and have virtually zero negative effect on the natural environment, unlike the current option.

Background Information for above grounds:

1. Failure to make a full and proper environmental assessment consistent with modern Canadian standards, and to make such assessment publicly available.

> The Winnipeg EA focuses on a tiny subset of topics normally included in EA's conducted elsewhere in Canada. For comparison purposes, please refer to the following example of a recent typical transit environmental assessment from Ontario for a similar size city (Waterloo): http://rapidtransit.regionofwaterloo.ca/en/projectinformation/resources/rapid_transit_ea_phase_2_summary_report_-_final_draft.pdf
>
> Example of relevant section topics prepared for the Waterloo rapid transit analysis listed above (Contents):
>
> 3.0 THE PREFERRED TRANSPORTATION SOLUTION FOR WATERLOO REGION
> 4.0 DESCRIPTION OF THE ENVIRONMENT POTENTIALLY AFFECTED
> 4.1. DESCRIPTION OF THE STUDY AREA
> 4.2. EXISTING ENVIRONMENTAL CONDITIONS
> 4.2.1. EXISTING BUILT ENVIRONMENT
> 4.2.2. EXISTING NATURAL ENVIRONMENT
> 5.0 PHASE 2: ALTERNATIVE DESION METHODS CONSIDERED
> 5.1. PHASE 2 STEP 1: IDENTIFICATION AND EVALUATION OF ALTERNATIVE TRANSIT TECHNOLOGIES AND ROUTE DESIGNS
> 5.1.1. IDENTIFICATION OF ALTERNATIVE TECHNOLOGIES
> 5.1.2. IDENTIFICATION OF ROUTE DESIGNS
> 5.1.3. CRITERIA FOR SCREENING OF TRANSIT TECHNOLOGIES AND ROUTE DESIGNS
> 5.1.4. EVALUATION OF TRANSIT TECHNOLOGIES
> 5.1.5. EVALUATION OF ROUTE DESIGNS
> 5.1.6. SUMMARY OF TECHNOLOGY AND ROUTE DESIGN SCREENING
> 5.2. PHASE 2 STEP 2: IDENTIFICATION AND EVALUATION OF ROUTE SEGMENT ALTERNATIVES AND THE APPROPRIATE RAPID TRANSIT TECHNOLOGY
> 5.2.1. THE ROUTE SEGMENTS AND STATION LOCATIONS
> 5.2.2. EVALUATION OF THE ALTERNA11VE ROUTES AND TECHNOLOGIES
> 5.2.3. COMPARATIVE EVALUATION OF STATION LOCATIONS, ALTERNATIVE TECHNOLOGIES AND ROUTES
> 5.2.4. RANKING OF THE ROUTE AND TECHNOLOGY ALTERNATIVES
> 5.2.5. REASONED ARGUMENT
> 5.2.6. RECOMMENDATIONS
> 5.3. PHASE 2 STEP 3: IDENTIFICATION AND EVALUATION OF RAPID TRANSIT SYSTEM ALTERNATIVES
> 5.3.1. IDENTIFICATION OF ALTERNATIVE RAPID TRANSIT SYSTEMS
> 5.3.2. RENDERINGS

5.3.3. EVALUATION OF ALTERNATIVE RAPID TRANSIT SYSTEMS
5.3.4. RIDERSHIP FORECASTING
5.3.5. FUNCTIONAL DESIGN
5.3.6. MULTIPLE ACCOUNTS EVALUATION
6.0 DE8CRIPTION OF THE PREFERRED RAPID TRANSIT SYSTEM
7.0 IMPACT ASSESSMENT AND MITIGATION MEASURES FDR THE PREFERRED RAPID TRANSIT SYSTEM
7.1. TRANSPORTATION
7.1.1. PROPERTY
7.1.2. TRANSIT AND TRAFFIC OPERATIONS
7.2. SOCIAL / CULTURAL ENVIRONMENT
7.2.1. RAPID TRANSIT NOISE
7.2.2. CONSTRUCTION NOISE
7.2.3. VIBRATION
7.2.4. CONSTRUCTION VIBRATION
7.3. NATURAL ENVIRONMENT
7.3.1. STORMWATER
7.3.2. ECOLOGICAL
7.3.3. AIR QUALITY
7.3.4. MINERAL AGGREGATE RESOURCES
8.0 MONITORING AND FUTURE COMMITMENTS

Of the above list, the Winnipeg EA focuses on items 7.3.1 and 7.3.2. I expect that the Winnipeg ecological analysis, which is extremely sloppy, will likely be extensively criticised elsewhere by the Parker Wetland group (for example, a species assessment conducted in October instead of the springtime). The Winnipeg storm water analysis raises unanswered issues of basement flooding potential along the busway route, which the report does not address other than to acknowledge that there will be deliberate constrictions where the busway drainage enters the local sewer system.

Example of relevant background studies prepared for the Waterloo rapid transit analysis listed above (p5):

Phase 2-Step 1
- Technology and Route Design Screening Report

Phase 2-Step 2
- Corridor Screening Report
- Phase 2 Step 2 Transportation Modelling Technical Memos
- Property Requirements Methodology Memo
- Assessment of Ability to Serve Residential / Institutional Uses Report
- Vibration Impact Assessment Report
- Noise Impact Assessment Report
- Cultural Heritage Resources: Built Heritage and Cultural Heritage Landscape Report
- Recreational Environment Report
- Public Health Benefits Report
- Ecological Impact Assessment Report
- Assessment of Hydraulic and Stormwater Impacts Report

- Air Quality Assessment Report
- Assessment of Economic Benefits Report
- Re-urbanization Potential - Rapid Transit Station Areas Report
- Stage 1 Archaeological Assessment Report
- Transit and Traffic Operations Report
- Phase 2 functional Design Criteria Report
- Capital and Operating Costs Summary
- Mineral Aggregate Quantities Summary

Phase 2-Step 3

- System Alternatives for Phase 2 Step 3 Evaluation Report
- Assessment of Decision Sections on Route Alternatives Report
- Phase 2 Functional Design Report
- Traffic Assessment of Rapid Transit System Options in the three Urban Centres
- Phase 2 Step 3 Travel Demand Modelling Report
- Multiple Account Evaluation (MAE) Report.
- Assessment of BRT Operations for 2031 Memorandum
- Land Use Benefits of Intermediate Capacity Rapid Transit - LRT vs. BRT Memorandum

These reports are available as background Information from the Region.

There is no comparable paper trail in Winnipeg.

2. Failure to make a full and proper professionally sealed transit passenger traffic assessment, and to make such assessment publicly available. This assessment is necessary for the completion of item (1), eg. GHG impacts.

Please see attached submission to City of Winnipeg, June 3, 2014.

3. Failure to present dependable Professional Engineering evidence that the proposed system will work as planned or even of what that expected performance level is.

Please see attached submission to City of Winnipeg, June 3, 2014.

4. Failure to provide evidence of a Professional Engineering seal, in accordance with the Engineering and Geoscientific Professions Act, on relevant studies referred to in the project environmental assessment as justifications for the project.

Please see attached submission to City of Winnipeg, June 3, 2014.

June 3, 2014

Chair and Members
Standing Policy Committee on Infrastructure Renewal and Public Works
The City of Winnipeg
510 Main Street
Winnipeg, MB

Re: SPC Infrastructure Renewal and Public Works Committee
Public Hearing - 9:00 a.m., Tuesday, June 3, 2014

Capital Integration Project - Southwest Transitway (Stage 2)
and Pembina Highway Underpass (SRTC)

Please accept the attached document entitled "BRT Analysis Technical Critique," dated June 3, 2014, and prepared by Ed Innes of Winnipeg for submission at this Public Hearing. Mr. Innes is unable to present the report in person this morning.

Ed Innes, MSc(EE), is an energy specialist, with a broad background in energy systems analysis, including transportation systems. Ten years of that experience is in emerging alternative energy systems, including leading-edge electric and hydrogen powered vehicles. It was necessary to study transit system behaviour as part of the energy analysis of those systems. Ed has received requests to speak on these topics from as far away as Europe and Asia. Ed holds two degrees in Electrical Engineering from the University of Manitoba and is the current Past President of the Manitoba Electric Vehicle Association (MEVA). Ed also enjoys reading transportation studies, and is familiar with the jargon and techniques used, and how such studies have evolved over the past several decades from professional engineering documents into public relations exercises (particularly in Winnipeg).

Respectfully submitted
on behalf of Ed Innes:

David Sanders

BRT Analysis Technical Critique
For June 3, 2014

In 1955, the Winnipeg streetcar system was dismantled. Ridership promptly fell from about 75 million in 1954, the last full year of remaining service, to about 60 million only 4 years later, a loss of 15 million or 20%. It then stabilized at 60 million for the next 20 years. In the election following the dismantling, Mayor Sharpe was soundly defeated by an upstart, Stephen Juba, and is still the last incumbent mayor to fall while in office.

While it is not possible to directly link the two events, it is also not possible to dismiss that tens of thousands of inconvenienced riders likely remembered come election day.

But that is not the full impact of dismantling the streetcar system, which began earlier. At its peak, Winnipeg had 195 km of track and 105 million riders. Those who claim that Winnipeg is too small a city to afford or deserve such a system should remember these numbers. Today we have a city that is over twice the size and has only 40% of the ridership. We also have a transit system that can no longer fund itself out of fares, that is more easily shut down by winter storms, that consumes over six times as much energy per km of vehicle travel, and one that emits harmful Group 1 human carcinogens (diesel exhaust), as classified by the World Health Organization.

As John Sansom, the Toronto Transit Commission's director of planning, said in the Sept. 18, 1969 Globe and Mail, "Streetcars can cope with 10,000 passengers an hour on a busy street, and 15,000 to 20,000 an hour if they are coupled into trains and have their own right-of-way." Mr. Sansom said transit experts are starting to wonder whether the conversion to buses by most North American public transit bodies was a good idea after all. "For instance, it looks as if taking the streetcars off Bay Street was a big mistake. The buses aren't carrying a fraction of the number of people."

The modern term for streetcars coupled into trains is Light Rail Transit, or LRT for short.

Today, our civic administration wishes to further perpetuate these disadvantages by pursuing a so-called "Bus Rapid Transit" system -- a vague public relations concept with no consistent physical manifestation. In fact, the majority of such "BRT" systems are virtually indistinguishable from ordinary bus service running on ordinary streets, such as the final 3 km downtown portion of our own system, and can hardly be referred to as "Rapid Transit". "Rapid Transit", while it lacks a formal definition, normally refers to sleek subway trains zooming unimpeded under the congested streets in the hearts of major cities, and certainly not to buses trundling down those very same streets overhead. To avoid confusion, this discussion will use the specific term busway (or bus roadway) to refer to a roadway constructed for the near exclusive use of buses.

No other major city in Canada today is attempting to make busways the backbone of their transit system. In fact the only other major Canadian city that has such a system is Ottawa, a system that was once regarded as the international paragon of busway design and the inspiration for similar systems around the world, including Winnipeg. Ottawa has begun the arduous process of getting rid of its busways and upgrading to Light Rail Transit. It turns out that the best busway system in the world cannot keep up with Canada's oldest surviving streetcar system in Toronto when it comes to moving passengers.

There are important traffic engineering reasons for choosing a rail system. This is why the Ottawa busway network today, which is similar to the one Winnipeg is planning, is in LOS F or failure. That's engineering jargon for the volume of passengers exceeding the capacity of the system.

The average passenger feels this failure as congestion and delays, yet overall ridership is only 14.7% higher in Ottawa than when the first busway opened in December of 1983. Meanwhile, the population grew by over 60%. In fact, Ottawa-wide ridership fell 25% in the first 12 years after the busway system began operating, and is still down by about 28% adjusted for population. (Calgary ridership is up 139% with LRT, and population is up 72%.) The busways merely shifted the passenger load into an unsustainable concentrated bus pattern. The Ottawa busway system has turned into a planning disaster. Ottawa's urban busways turned out to be disposable white elephants with high operating costs.

The engineering explanation behind the low capacity of bus systems is in the physics of moving lots of 50 passenger buses that naturally interfere with one another, whereas, trains can carry 300 to a 1000 or more passengers relatively unimpeded. A single train can simply glide in unencumbered, engulf and release large crowds in one fell swoop, and glide on. What this means at a stadium Bomber game, for example, with 10,000 transit riders, is that the whole crowd can be efficiently whisked off with as few as 10 trains, in as little as 20 to 30 minutes. The bigger the trains, the faster it all goes. Every added rail passenger lowers the per unit cost of the track.

With buses on the other hand -- with or without a busway -- 200 buses are needed, which immediately causes congestion. The typical desperate solution is at least 2 hours of crush-loading (more than 50 passengers) to reduce the number of buses and cram the passengers through. Every added bus increases the need for more parallel road lanes to restore service quality. A single busway lane cannot handle this type of load without slowing right down to a crawl. Now imagine this happening every day at rush hour.

If the higher concentration of buses coming off the end of a full busway are fed into already congested downtown streets when they reach downtown, the predictable result is Ottawa's gridlock, the very thing that rapid transit is supposed to solve. This is usually the biggest flaw in a busway plan. Because of these inherent weaknesses, busways are the only form of mass transit that is not very capable of transporting masses of people or supporting urban density. They are primarily a suburban option for low-density suburbs with perpetually low ridership to ensure a lower probability of overload.

The problem with Winnipeg's busway proposal is that there is very little evidence to suggest that a proper traffic engineering analysis has been performed. To be clear, such an analysis is easy to identify. Under the Engineering and Geoscientific Professions Act it is required to bear the seal of the Professional Engineer who bears the full responsibility for it. It cannot be the personal opinion of an engineer, nor can it be in the form of an informal memorandum or report. It is a legal document and must be in the proper legal format.

There appears to be no such proper analysis of the passenger flows throughout the city to justify the need for a busway system in the Pembina corridor, nor one which prioritizes the various corridors based on actual ridership exceeding corridor capacity. There appears to be no proper traffic analysis of the various local alignments for the chosen Pembina corridor, merely vague assertions in non-specific reports. There appears to be no proper comparative analysis of the passenger flows and capacities of various corridor route options and technologies.

In short, the city has not presented dependable Professional Engineering evidence that the proposed system will work as planned or even of what that expected performance level is.

For example, the 2005 Made in Winnipeg Rapid Transit Task Force report is referred to as the justification for busway technology in the 2014 Stage 2 Environmental Review and Assessment, and in the 2014 Stage 2 P3 Business Case Summary. This Task Force, composed entirely of non-expert personnel and headed by Councillor Wyatt, erroneously determined on page 29 that the total cost for both Stages 1 and 2 of busway construction would be $84 million, about one eighth the total cost being discussed today. Despite being off by an order of magnitude in this central conclusion, the referring reports have the egregious audacity to refer to it. The remainder of the report is largely populated with other empty busway proponent marketing rhetoric, propaganda, and empty assertions. It lacks a Professional Engineer's seal.

In another example, the 2013 Stage 2 Alignment Study states that, "Over time, it is expected ridership will increase in the range of 15 - 20%", and then immediately contradicts itself with a 2005 July 27 memorandum as a justification for a 40% increase in ridership. 2005 is before the Parker alignment was even considered. The 2014 P3 Business Case Summary adds further confusion by claiming that ridership will only grow 12% to 15%. No actual attempt is made in either of these studies to quantify or determine the ridership for either option, or to determine whether the busway will be capable of handling it. Remember that in Ottawa, the paragon of busway design, ridership fell 25%. The study lacks a Professional Engineer's seal, and in fact such vague self-contradictory analysis is not to be sealed under the Act.

This is shoddy analysis for a half billion dollar extension to a busway that has hardly inspired Winnipeggers in the first place. Imagine if the Winnipeg floodway, a project of similar cost, had been constructed without first figuring out how much water there would be, whether it could handle the water flows, or without figuring out the water-handling capabilities of other options.

But a proper professional functional analysis should go further than just passenger traffic flows. In other Canadian cities it is typical to objectively quantify the effects on property values, urban density, modal split between transit and automobiles, greenhouse gas emissions, air pollutants, and a litany of other environmental features in Environmental Assessments for transit projects. The 2014 Stage 2 Environmental Review and Assessment excludes or glosses over these features, and instead focuses on a natural ecology assessment that was foolishly performed in October when most species have disappeared for the season.

Considering that the entire finished busway route, with its three dog-legs, is 40% longer than the old Pembina bus route it is replacing, and thus requires a 40% average increase in speed just to keep up, there is a very real possibility that fuel consumption will increase significantly. Where greenhouse gases are mentioned, the report fails to quantify them, but quantifying them would depend on first quantifying the traffic and the appropriate number of buses, which as already mentioned is missing. It lacks a Professional Engineer's seal.

Our city is an outlier. Of the 10 largest cities in Canada, Winnipeg is the only city planning to make busways the backbone of its transit system. It is the only city so preoccupied with one technology, that it is fixating on its 3rd and 4th busiest corridors -- Pembina and Nairn -- while ignoring its most natural

priorities -- Main and Portage. At least there are historical engineering reports that back up these priorities.

If our city had a proper paper trail of professionally sealed studies, it might be possible to claim that we are taking an innovative approach, but we do not. Instead, the studies we have are full of unprofessional rationalizations, empty rhetoric, marketing propaganda, and self-contradictions. Other major cities that have produced the proper professional paper trail have come to the opposite conclusion, that an LRT system is preferable, that it should be located in the middle of existing urban development, and not in inconvenient and inefficient dog-legs like Parker.

Furthermore, Ottawa's paradoxically severe busway congestion in the face of lost ridership, is a living demonstration of the folly of the approach Winnipeg is taking. The busways failed on both goals simultaneously, proving that such a counterintuitive result is possible, and perhaps to be expected. Every dollar Ottawa spent on busways was completely wasted now that it is upgrading busways to LRT, and the cost of converting is approximately twice that of building a new LRT system from scratch. Building busways first, essentially tripled the cost of LRT. It did not save a single penny.

Winnipeg will eventually build LRT again. That part is certain. The only question is will it build it sensibly or will it build busways first.

In summary, it is time that Winnipeg copied other major Canadian cities and prepared a proper set of professional studies.

Ed Innes