

CITY OF WOODSTOCK

2019 Transit Operational Review

TRANSIT STUDY

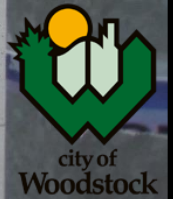


TABLE OF CONTENT

EXECUTIVE SUMMARY----- **3**

PROBLEM STATEMENT/GOAL----- **4**

SERVICE OPTIONS ----- **4**

 SIX (6) ROUTES/ 30-MINUTE CYCLE ----- 5

 SIX (6) ROUTES/ 40-MINUTE CYCLE ----- 8

 SEVEN (7) ROUTES/ 30 MINUTE CYLCE ----- 12

 OTHER OPTIONS----- 16

COSTING----- **20**

 SIX (6) ROUTES/ 30-MINUTE CYCLE ----- 20

 SIX (6) ROUTES/ 40-MINUTESCYLE ----- 20

 SEVEN (7) ROUTES/ 30-MINUTE CYCLE----- 20

 OTHER OPTIONS----- 20

SURVEY RESULTS ----- **21**

RECOMMENDATIONS ----- **24**

Executive Summary

The City of Woodstock has had steady growth in the past few years, which has left pockets of lands unserved by public transportation. The City of Woodstock Transit Policy states the goal of the Transit Department is to provide public transportation to within 400m of 90% of the City's residents. In order to address this issue, City Council as part of the 2019 budget deliberations, approved Staff to complete an in-house study to investigate how to extend service to the newer residential and industrial areas of the city.

Staff initiated the study by creating three scenarios by which it might be possible to extend transit service:

1. Creation of six (6) routes on 30-minute cycles. This would basically be a modification of the existing-transit route network that would now stretch bus routes to the unserved areas.
2. Creation of six (6) routes on 40-minute cycles. This would keep the same number of buses on the road as we currently have but the existing time cycles would be extended to 40-minute cycles to permit the buses to travel farther during their route in order to reach new areas.
3. Creation of seven (7) routes on 30-minute cycles. This scenario would keep the existing 30-minute cycle, which is a convenient repeating pattern and familiar to our ridership but adds an additional bus on the road to increase the coverage area.

In addition to these three scenarios, recognizing that the city continues to grow, Staff also looked at what a future system might resemble to meet the future growth of the City. This new route system would be able to have individual bus routes that can be modified or expanded without having to affect the all other routes. Allowing riders to transfer at locations where routes overlap will enable riders to find a shorter and more direct path to their destination.

With the current system of all buses making 30-minute loops and switching routes, each loop means that changes cannot be made without affecting the other routes. Also, the existing system only allows transfers from one bus to another at the transit terminal which means that depending on the source and destination of the rider, some users would need to make their way downtown before they can go back out to their ultimate destination.

Once feasible options to these scenarios were developed, Staff held Public Information Center meetings to present the public with seven options and receive feedback. Two options for each of the three scenarios were developed as well as a concept for future routing. A survey was also made available online and distributed on the buses inviting the public to provide their input. Based on public feedback, comments and test drives, staff further revised the seven options to create three preferred options, now referred to as Options A, B & C.

Staff anticipates that a system similar to that presented in Option C is the preferred option to best suit the continued growth of the City of Woodstock. This futuristic transit system will increase reliability and convenience for its riders. However, the entire infrastructure is currently not in place to implement this option and this option would need to be phased in. As an alternative, implementation of either Options A or B will still address the immediate goal of bringing transit service to over 90% of the residential areas in the City. With the introduction of on-route transfers and, if funding is approved, the use of a rider application (app) will support the implementation of either Option A or B as a transition into a future system similar to that of Option C.

TRANSIT STUDY

In order to address the immediate need to expand the transit system service area, Staff recommends Option B, seven (7) routes with 30-minute cycles. Both Options A and B expand the service into new residential and industrial areas and should provide reliable on time service. Staff feels that the expansion of area and reliability will make the Woodstock Transit system more attractive to its residents resulting in increased ridership. Increased ridership will result in increased revenue through fares and gas tax provisions. Although Option B requires an additional operational cost for another bus to be on the road, it retains the existing 30 -minute familiar cycle time. The six (6) route 40 -minute cycle option increases the length of time between buses to a point that Staff believes that it will diminish the attractiveness or usefulness to its users. If peak buses are added to Option A to decrease the cycle time to 20 minutes, the additional capital and operational costs will be greater than those for Option B. Both Options are anticipated to have the same base capital cost for sign and shelter relocations and replacements.

PROBLEM STATEMENT/GOAL

The City of Woodstock Transit Policy states the goal of the Transit Department is to provide public transportation to within 400m of 90% of the City's residents. Due to recent growth of the city, the transit system is no longer meeting this goal (see attached Figure of Current Route Network). Currently, a major residential area north of the Pittock Reservoir does not have transit service. The main goal of the study is to investigate route options to extend public transit into the currently unserved areas.

It is preferred to meet this goal without an increase in operational costs. However, extending transit routes will result in longer cycle times. This may affect the desirability and usefulness of Transit to its users. Therefore, options of keeping the cycle times the same and increasing the number of routes were also investigated.

A secondary goal of the study is to investigate extending the transit routes to existing industrial areas to provide transportation for employees. Such an extension of service will make public transit more useful to residents and increase ridership.

SERVICE OPTIONS

In order to create possible new transit routes to service the growing city, staff analyzed three different scenarios six (6) routes with 30-minute cycles, six (6) routes with 40-minute cycles or seven (7) routes with 30-minute cycles. Recognizing that the city will continue to grow, Staff also looked at creating a more flexible routing system that would allow individual routes to be modified/extended as the city grows without the need to revise all of the routes.

Once some possible routes to meet these three scenarios were developed, a Public Information Center (PIC) was held to present the options to the transit users, Council and general public. A survey was also offered online and on the buses in order to gather information concerning ridership and comments. All of the options presented expanded service to be within 90% of all of the residential areas of the city. In Service to the Pattullo and Commerce Way Industrial Parks is also added. None of the transit options were able to provide service to the newer residential subdivision on the 11th Line due to the lack of an interconnecting road. Comments from the surveys and PIC were received and taken into consideration in developing a final preferred option for each of the scenarios.

One major operational change that all of the options include is the ability to allow riders to transfer from one bus route to another at certain transfer points along the routes. In the current system riders are only allowed to transfer from one bus to another at the Transit Terminal downtown. Allowing riders to transfer to another bus where the routes intersect permits the riders to avoid travelling downtown and opens up the possibility to creating shorter more efficient trips to their destinations.

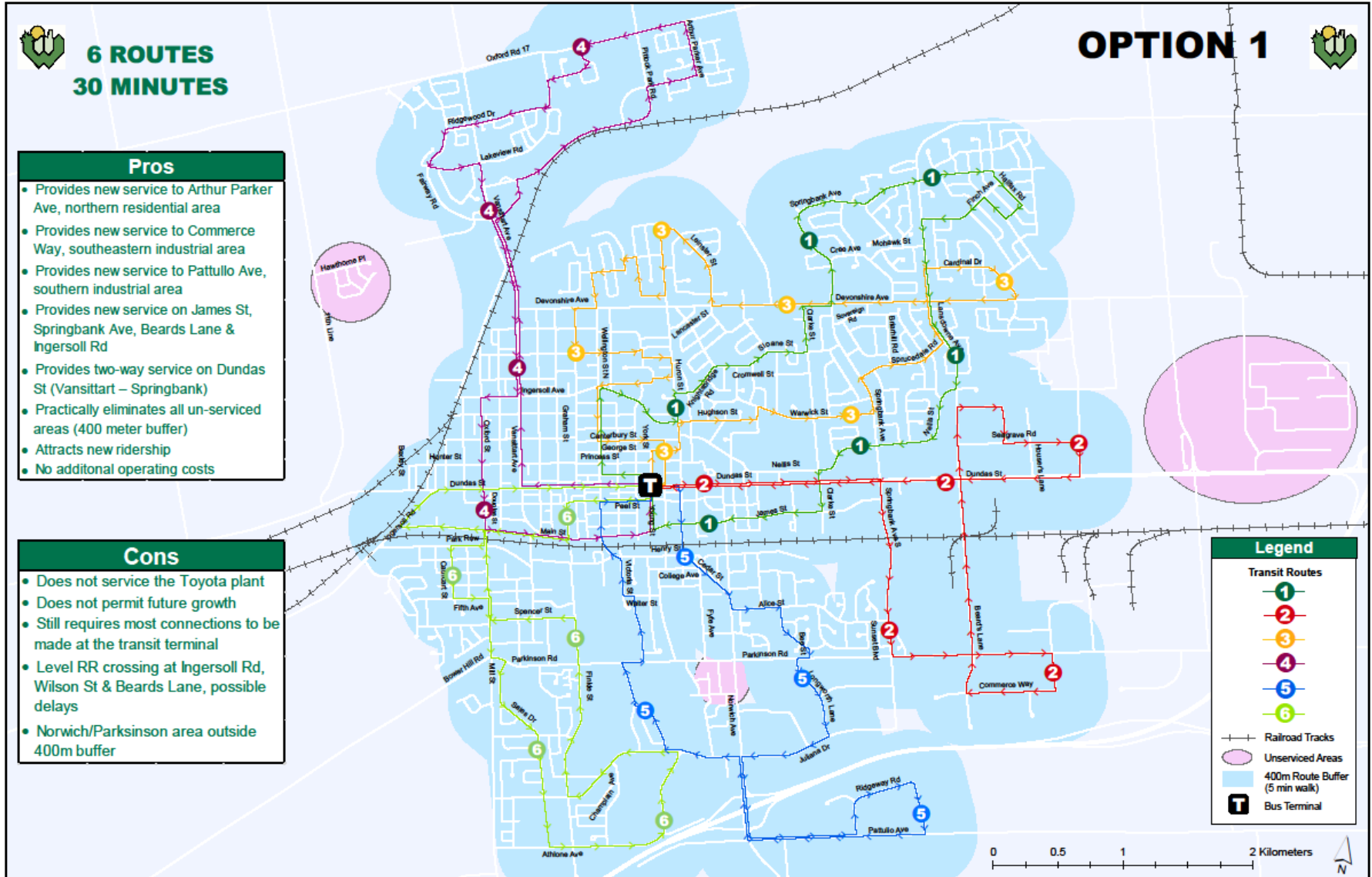
SIX (6) ROUTES/ 30-MINUTE CYCLE

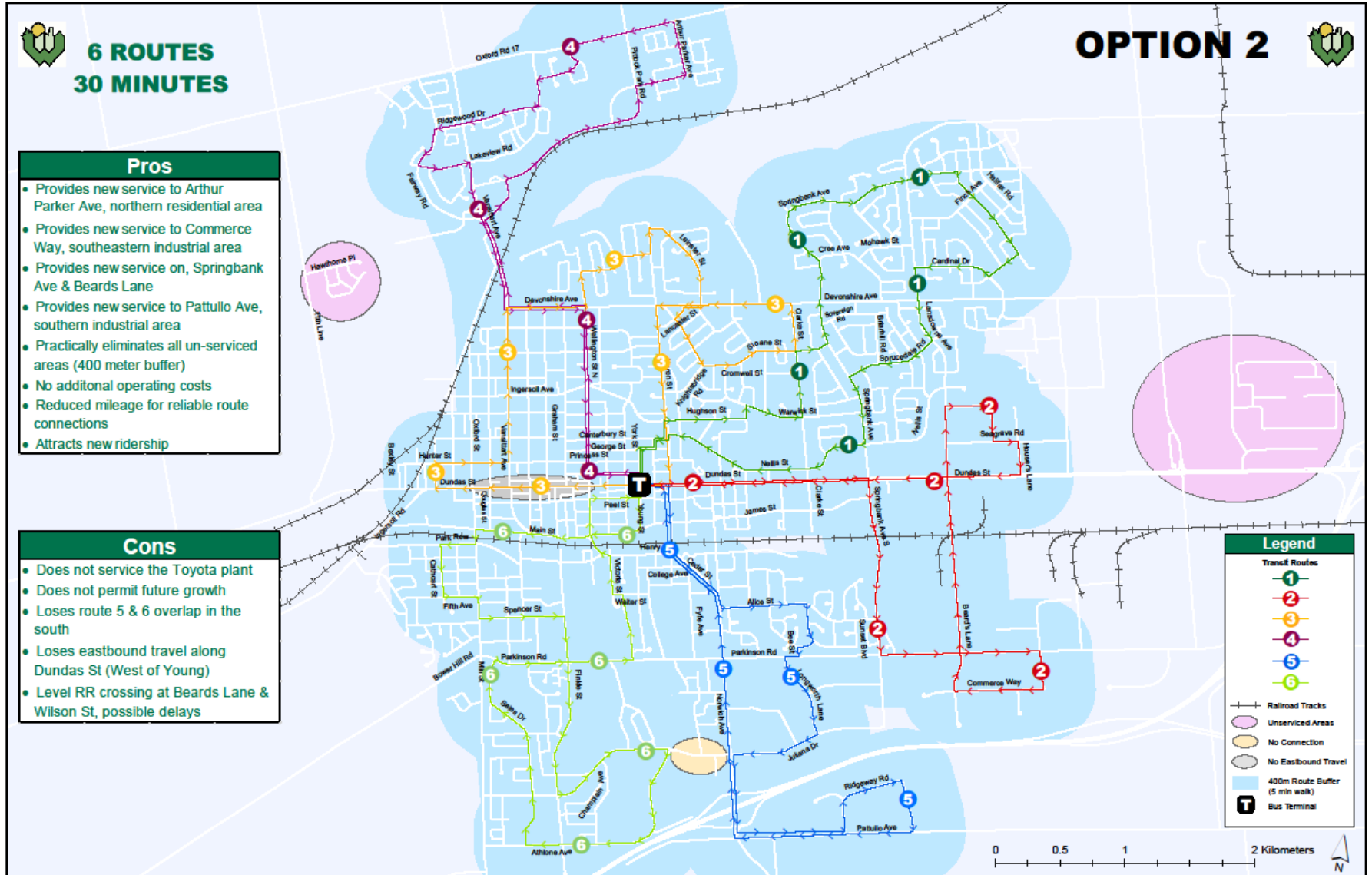
Options 1 and 2 were presented at the Public Information Center to stakeholders and show routes that may be possible using a six (6) route, 30-minute cycle criteria. For the most part, the routes were able to be adjusted to service most of the residential areas within the city and even be extended out to service the Pattullo and Commerce Way Industrial Parks. There are some minor residential areas that are not within the preferred 400m buffer, however the goal of 90% of the residential areas being within 400m of a transit route is met. The new routes also do not overlap as much as they currently do, which limits the options that riders have from certain locations.

The advantage of these options are that they are very similar to the existing system. The six (6) routes means no increase in operational costs to the City. The 30-minute cycle time means that the routes remain easy to remember with every bus arriving at the transit terminal at the top and bottom of each hour of operation. It also keeps the existing timing that riders are familiar with although with changes of the routes proposed, not everything can stay the same.

The disadvantage of the six (6) routes/30-minute cycle option is that it extends the routes to the maximum limit possible to complete a 30-minute route and leaves no flexibility. Any delay while running the routes will result in not meeting the 30-minute cycle time. To date the City's transit system has managed to arrange the bus routes to only cross the rails at separated grade crossings such as at Henry/Wellington Streets and Mill Street. In order to stretch the transit routes as far as possible, this luxury is no longer possible. Since the proposed routes also propose using some of the at-grade crossings of the rail lines throughout the city, the chance of delays is significantly increased. Options 1 and 2 that were presented at the Public Information Center (see below) crossed the rail lines at Ingersoll Road., Wilson Street and Beards Lane. Delays in the system affect the reliability of public transit and the usefulness and desirability of public transit. If transit is not perceived to be useful or reliable, ridership will not increase even with the new routes servicing previously un-serviced area. Neither of the two options for six (6)/30-minute routes was able to be stretched far enough to provide service to the County Road #4 (CR 4)/Toyota plant area.

Further review of the proposed routes after the PIC showed that it was not possible to complete the routes within the 30-minute period on a consistent basis. Implementation of routes similar to these would result in frequent delays and inconsistent service. This would further lead to a transit system that is viewed as unreliable and unusable. For this reason it was determined that a six (6) bus, 30-minute cycle scenario is not possible.





SIX (6) ROUTES/ 40-MINUTE CYCLE

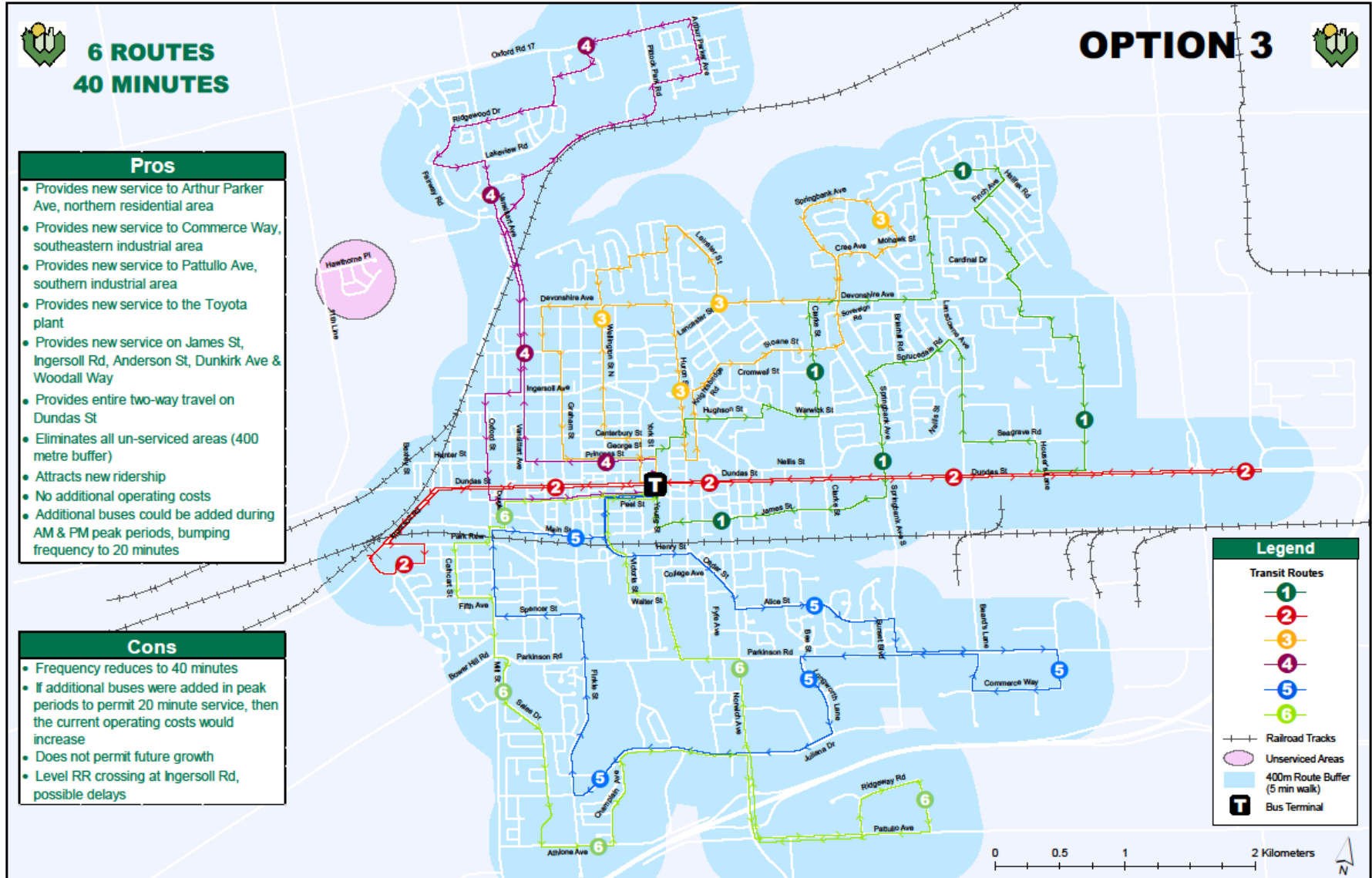
The second scenario of six (6) routes with 40-minute service was investigated next. Options 3 and 4 (see below at the PIC show the proposed routes that met this criterion. With this scenario, the city would still have six buses on the road but the cycle time is 40 minutes.

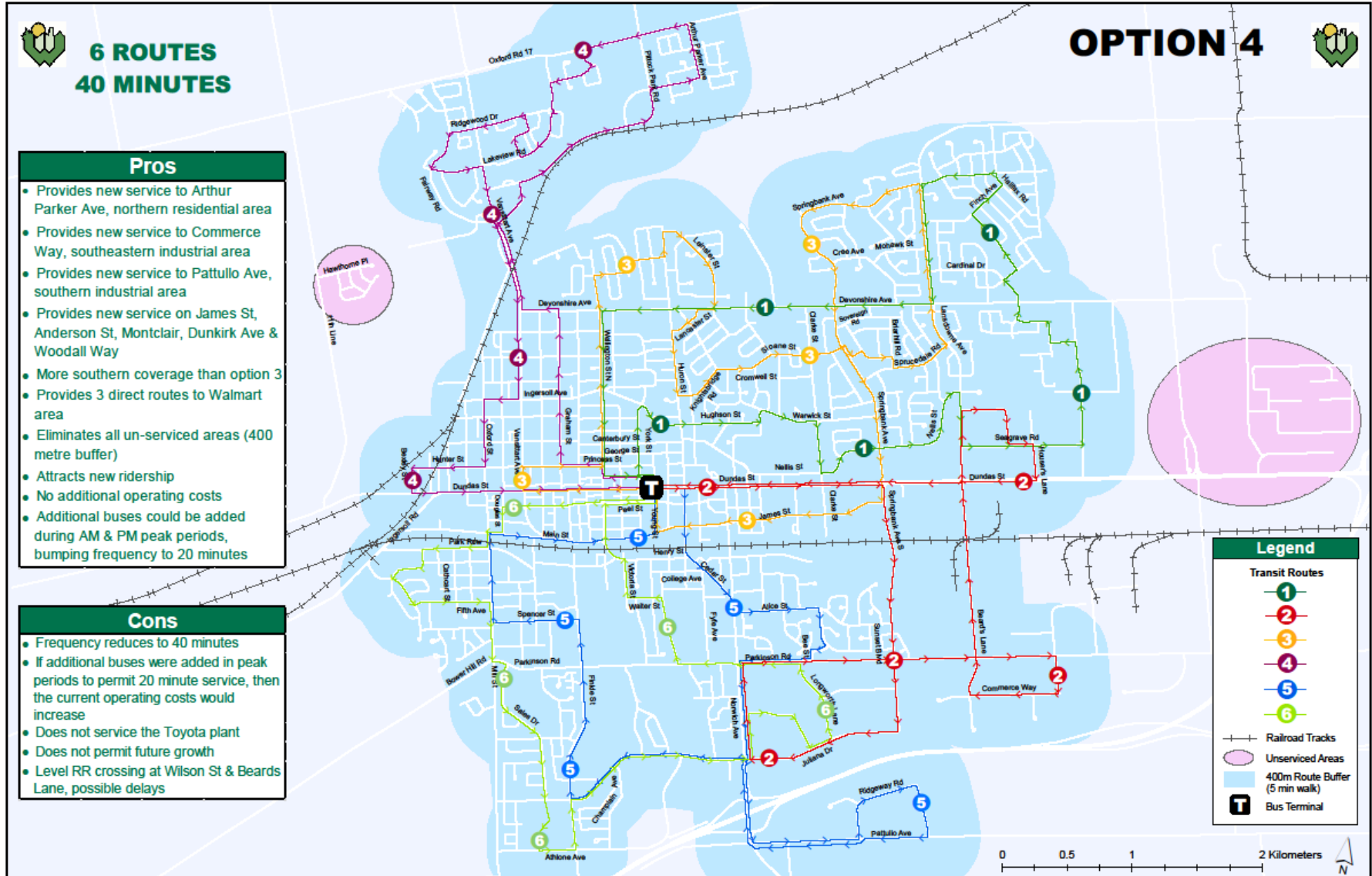
The longer cycle time allows the buses to extend their routes to a larger area each cycle enabling them to reach new areas as well as provide more overlap between the routes. The 40-minute cycle also allows for some leeway to accommodate delays and still be able to meet the posted times and schedules. This improves the reliability of the transit system for the riders. The preliminary routes are able to meet all of the residential areas in the city (except for the 11th Line development) as well as the Commerce Way and Pattullo Industrial Parks. The routes are closer to each other and overlap, which provides more convenience to the users.

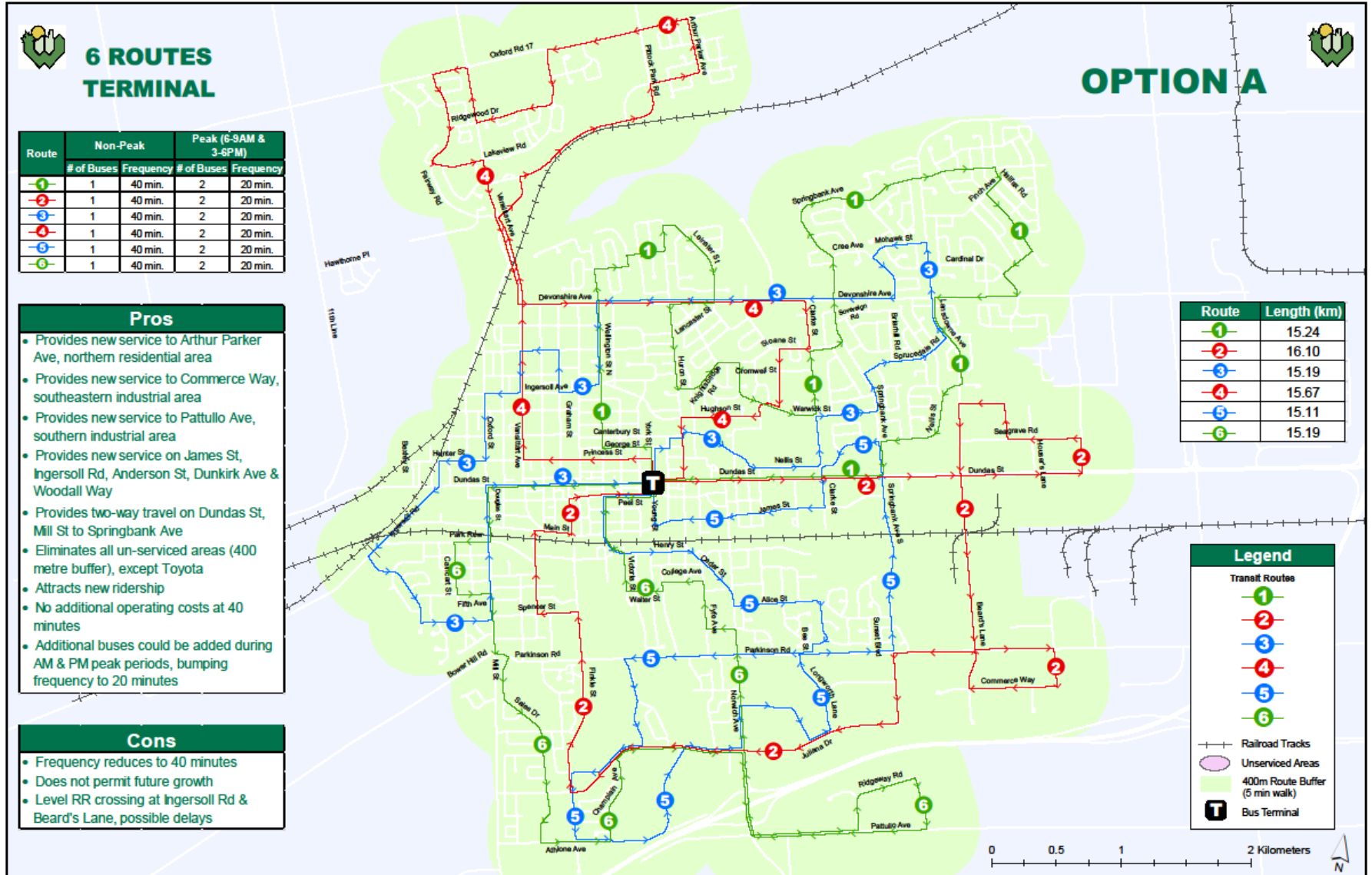
The major disadvantage of the six (6) bus/40-minute cycle scenario is that the 40-minute means that buses will not be at the bus stops or terminal as often as they are with a 30-minute cycle. Currently buses pass by each stop 32 times a day. With a 40-minute cycle that number would decrease to 24 times a day. At the transit terminal the buses would arrive on a two-hour cycle at the top of the hour, 40 minutes past and then 20 minutes past before they would arrive at the top of the hour again. This reduces the usefulness and attractiveness of the system for the riders. This could be offset by putting additional buses on during peak hours so that there are two buses running each route but this would be an increase in the operating budget and require additional capital costs.

Another disadvantage for this scenario is that they also involve at-grade crossings of the rail lines which will mean delays when a train is coming through. However, these delays are accounted for in the leeway that the 40-minute cycle provides and are present in all of the options presented so are not a disadvantage that is unique to this scenario.

Subsequent to the PIC, Staff drove the proposed routes to determine any issues. Results of the drives and comments received from the public were used to develop a final option for a six (6) route, 40-minute cycle scenario that Staff is confident is achievable and addresses comments from the public. This option is shown as Option A below. This option provides new transit service to the Arthur Parker residential area, Commerce Way and Pattullo Industrial Parks. It provides service to within 400m of all of the residential areas in the city and includes new service on James Street., Ingersoll Road., Anderson Street, Dunkirk Avenue and Woodall Way. It also provides two-way travel on most of Dundas Street. This option is unable to service the CR 4 and Dundas Street area. There are no additional costs with this option however, if deemed necessary to improve service, additional buses can be introduced to the system to cut the cycle time to 20 minutes during peak hours. This option still includes some at-grade rail road crossings (Ingersoll Road & Beards Lane) nevertheless, Staff believes that there is enough flexibility in the system to accommodate the occasional delay due to trains. This option will not be able to accommodate future growth of the city.







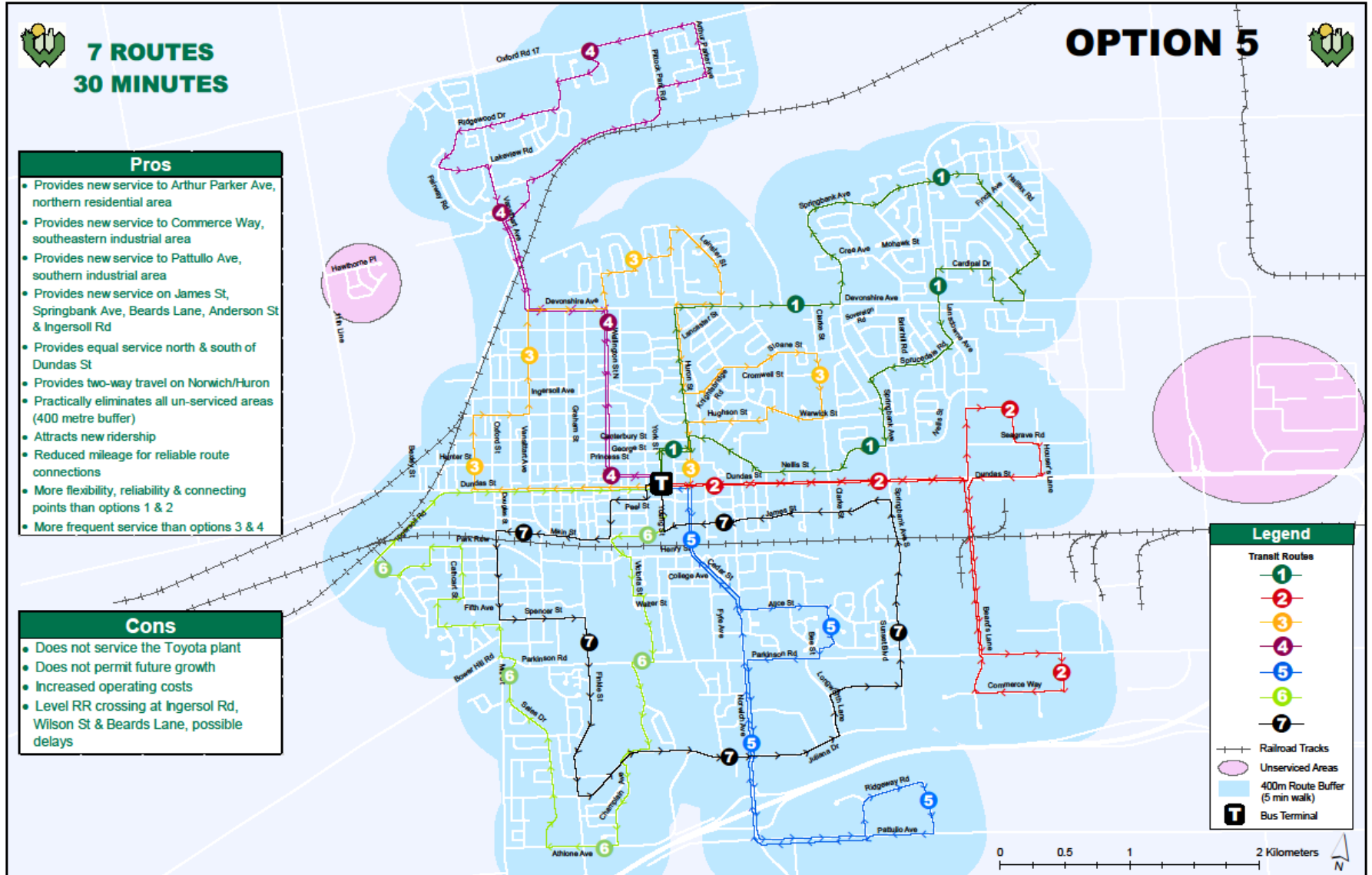
SEVEN (7) ROUTES/ 30 MINUTE CYLCE

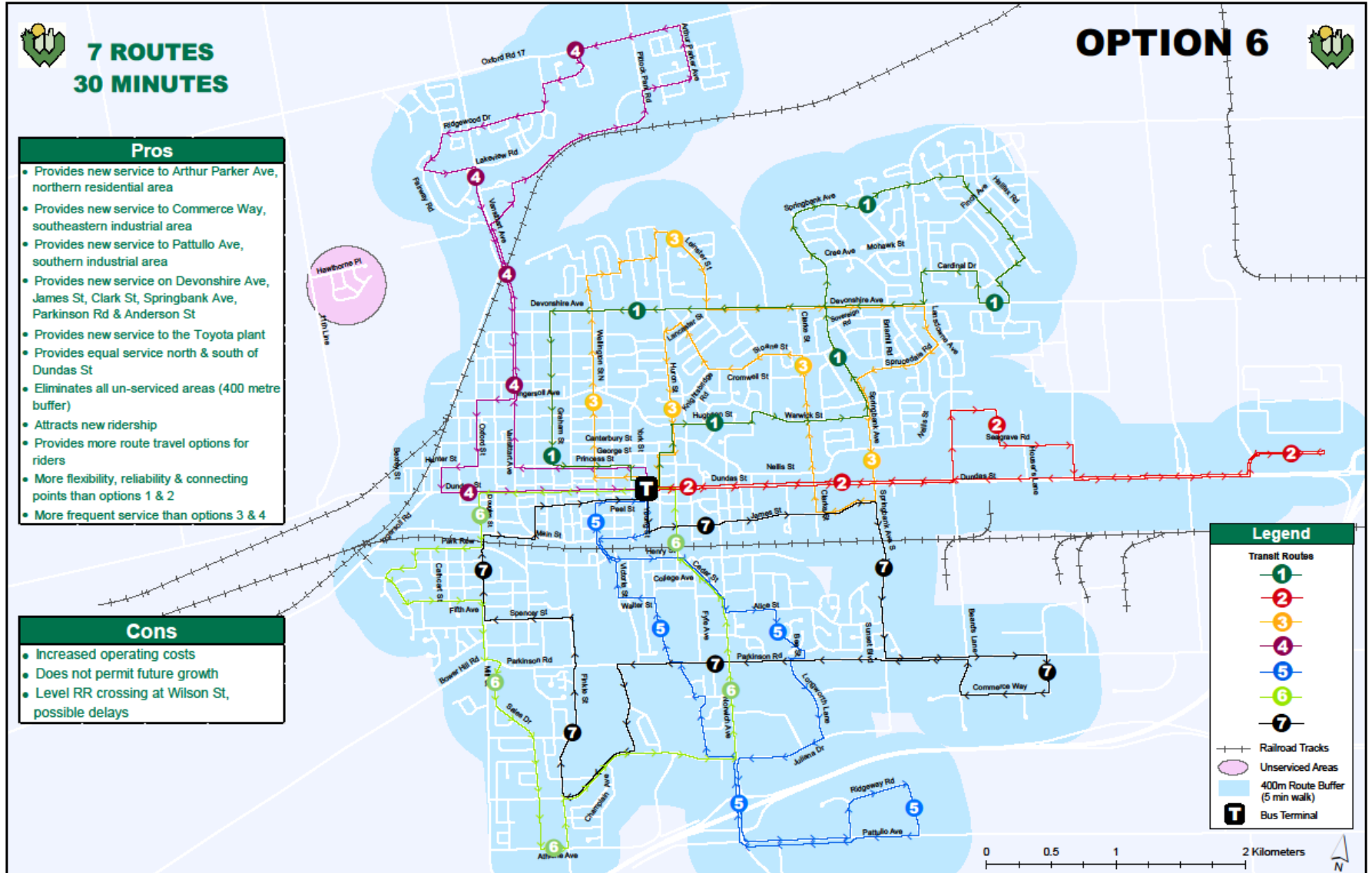
The third scenario examined was retaining the 30-minute cycle but with the addition of another bus. Options 5 & 6 (see presented at the PIC showed some possible routes using this criterion.

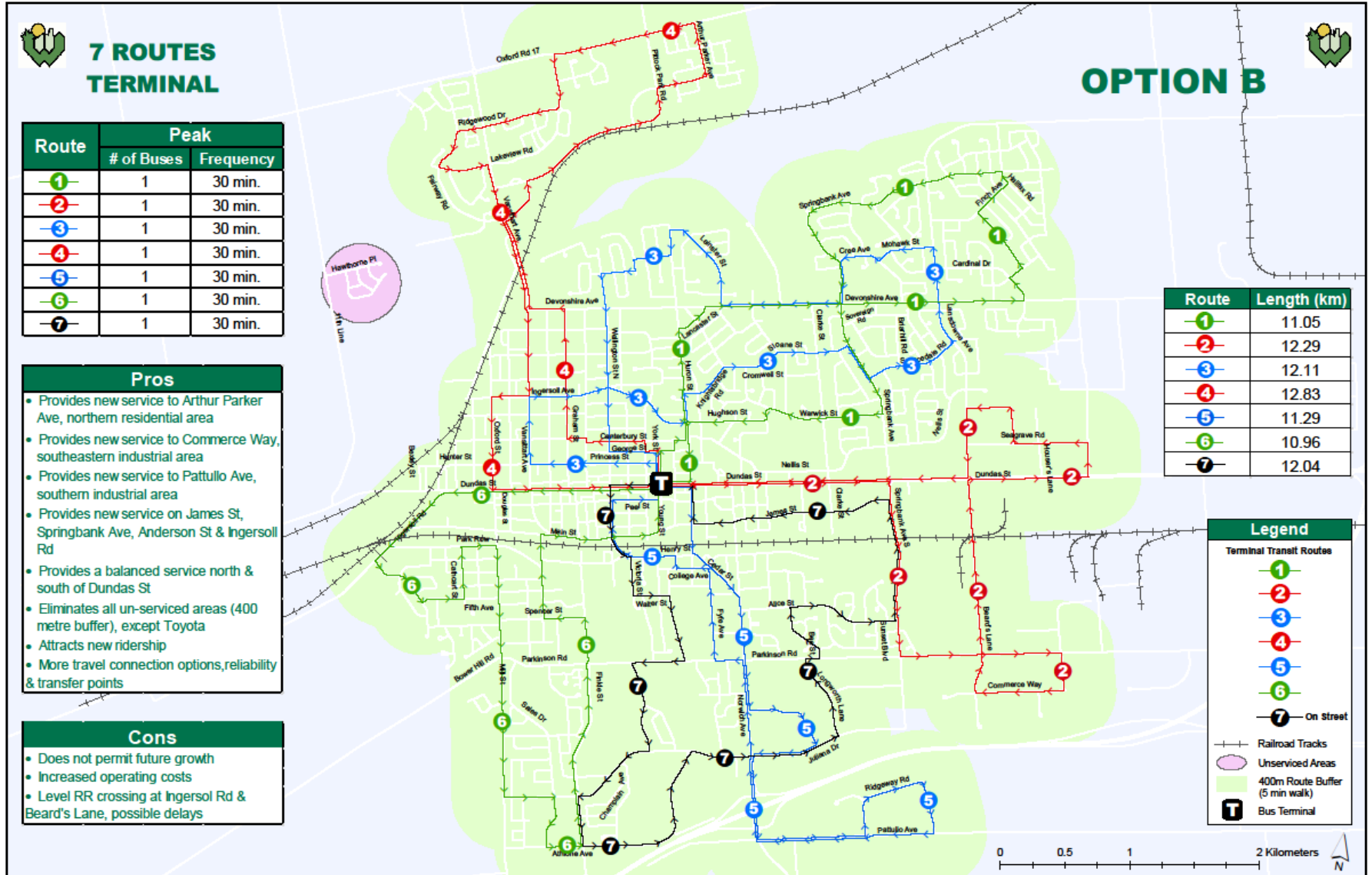
The advantage of the additional bus is that it allows the transit system to cover more ground in the 30-minute cycle that it does with six buses. As a result, new areas of the city are now possible to be served while keeping a fairly dense routing pattern that provides routes closer together with more overlap. This makes the transit system more appealing and useful to riders. All of the residential areas (with the exception of the 11th Line subdivision) are well serviced as well as providing transit service to the Commerce Way and Pattullo Industrial Parks. The routes are also designed with the flexibility to account for possible delays such as may be encountered at rail crossings. This keeps the system reliable to the user. The 30-minute cycle time means that the current timing pattern is retained. Also, the number of times that a bus passes by a stop remains at the current 32 times a day.

The main disadvantage of this scenario is that it requires the transit system to increase its operating budget in order to provide service for seven routes instead of the current six routes. This requires an additional driver, bus and operating costs that are not presently in the budget. Also, as stated previously with the other scenarios, at-grade rail crossings are used, which will result in delays when trains are coming through.

Options 5 and 6 were investigated more in depth after the PIC to determine real world issues with the proposed routes. Based on field investigations and comments received from the public a final seven (7) route, 30-minute cycle strategy was developed. This plan is shown on Option B below. This option introduces transit service to the Arthur Parker residential area as well as the Commerce Way and Pattullo Industrial Parks. In addition to providing transit service to within 400m of all residential areas, it also adds service onto James Street, Springbank Avenue, Anderson Street, and Ingersoll Road and offers a number of transfer points. Transit is unable to be confidently extended to the CR 4/Dundas Street area. In addition to increased operating costs, similar to the six (6) route/40-minute cycle scenario, this option also will not be able to accommodate long term future growth.





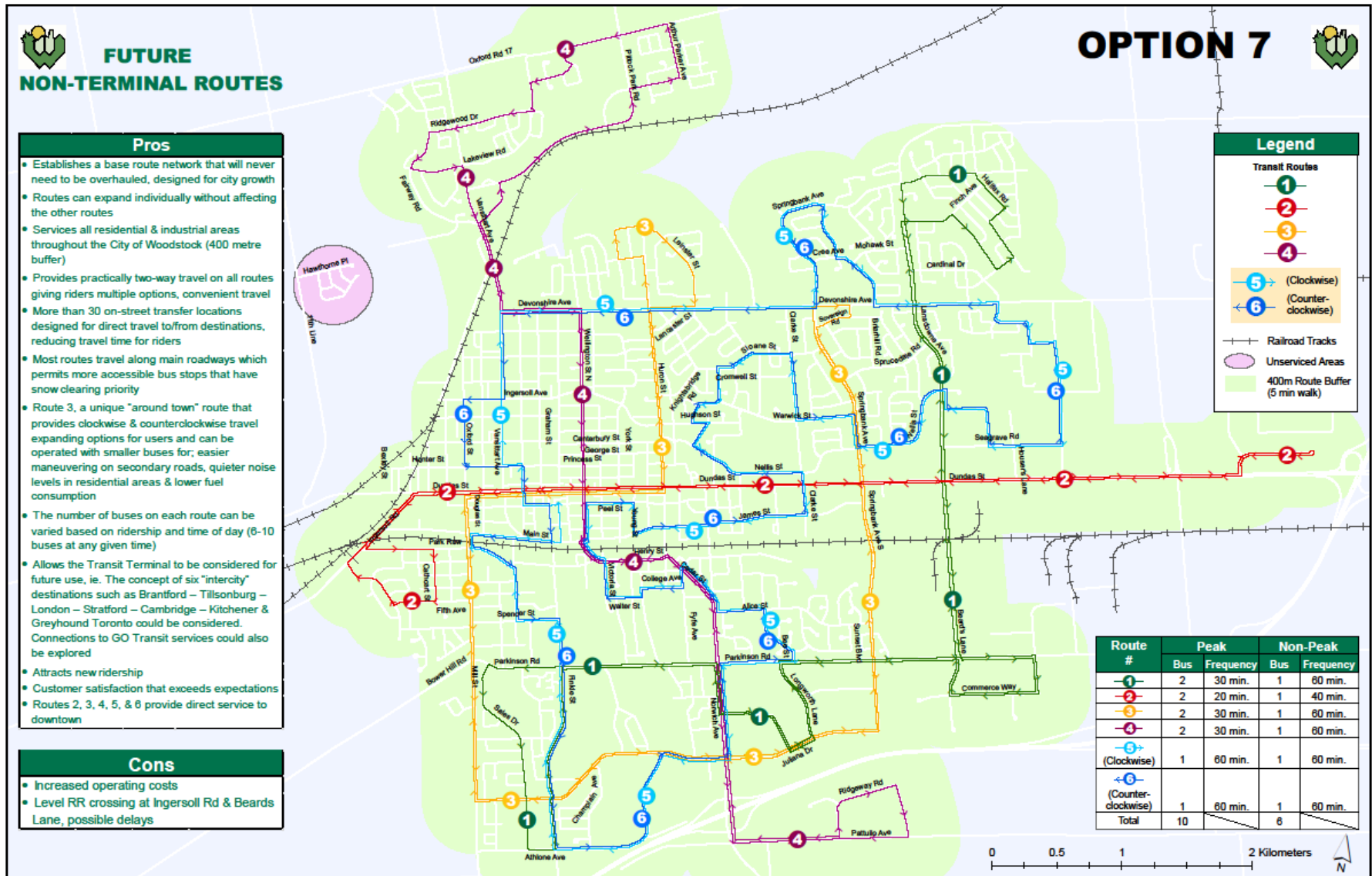


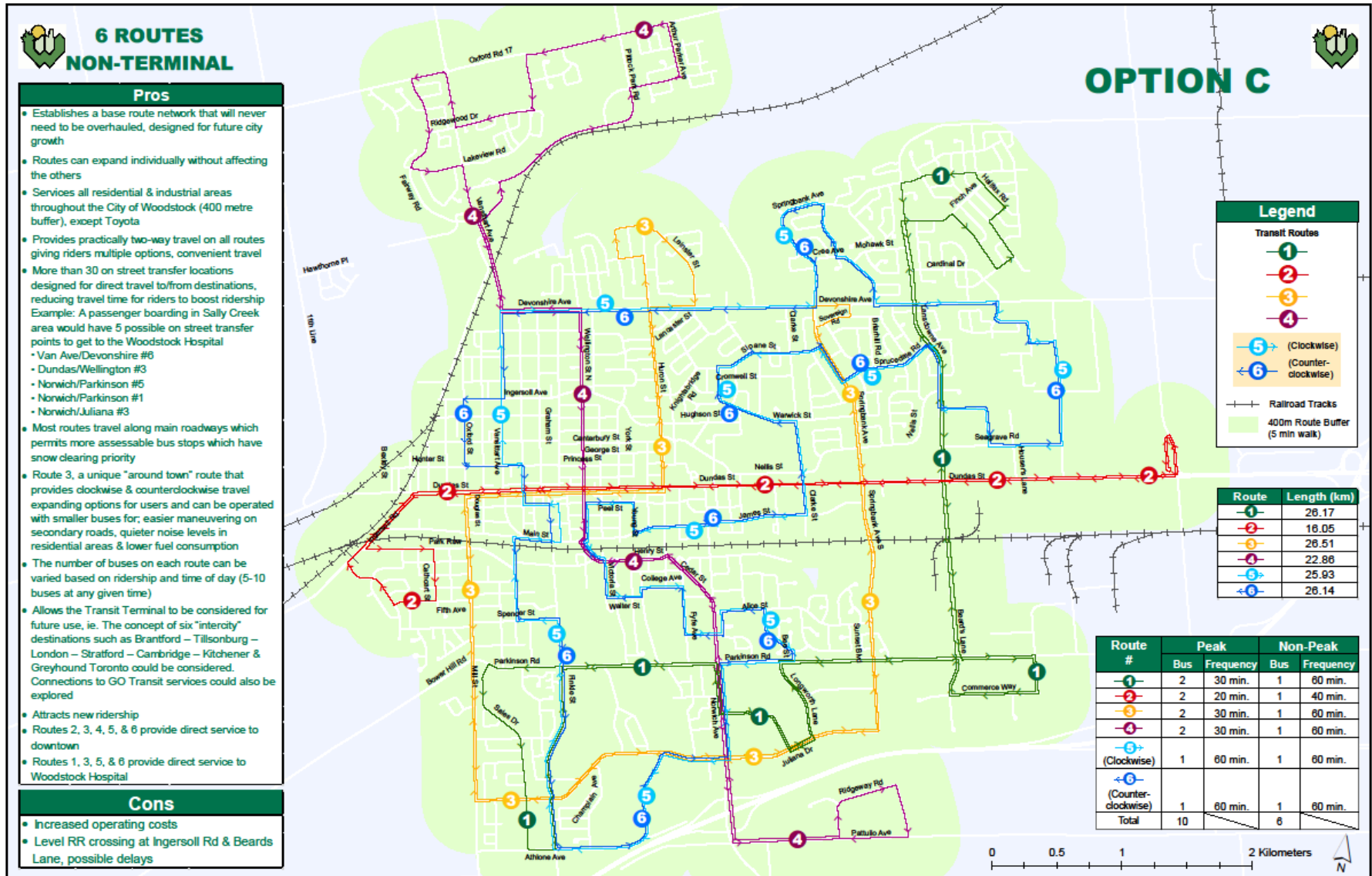
OTHER OPTIONS

The disadvantage of all of the above scenarios is that all of the routes are interconnected and they do not provide any room for future growth. To address this criterion and to envision what a future transit system may look like, Staff developed an option to meet these needs. The attached Option 7 was presented as a Future Option of what the routing may look like at some point in the future. The criteria behind the development of this option was to create a routing system with the most flexibility and usefulness to the user. Basically this option boils down to a circular route (routes 5 & 6) going around the city and individual “spike” routes that reach out and in from the circle to provide service throughout the city. Routes 5 and 6 are identical except that one bus would be driving the route in a clock wise direction and the other bus would be driving the same route in a counter-clock wise direction. The route is about 60 minutes long so a bus would be passing by each stop every 30 minutes. This matches the current service levels. The “spike” routes vary in length from 40 to 60 minutes. During non-peak times, this means that a bus would pass each stop every 40 to 60 minutes however, it is proposed that during peak times there would be two buses on each of these routes reducing the timing to 20 to 30 minutes. This option requires six buses during non-peak hours and 10 buses during peak hours. Most of the main corridors are provided with buses going in both directions and there is a large amount of overlap from one route to another, limiting the need for connections. The routing system is also fairly dense meaning that most destinations are well within 400m of a transit route. Riders would have multiple opportunities or options to use different routes to get from point A to point B. Depending on the time of day and location of the buses, one combination of routes may be faster than another. This option allows riders to transfer buses wherever one route crosses another eliminating the need for riders to go all of the way downtown in order to go back out again.

In order to get the most efficient use of the system, it is recommended to be implemented only after a rider app has become available to the public. An app would track the real time location of the buses and when a rider enters in a pickup and drop off location, would suggest the quickest way to get from A to B. Depending on where the buses currently are on their routes, the quickest path may not be the same each time. If a rider transfers at one location, they may have to wait up to 60 minutes for the transfer bus but if they take a different path and transfer at another location that wait time may be reduced down to 5 minutes. Because of the variance, the use of an app is highly recommended for the implementation of this system. Earlier this year City Staff made an application to the federal and provincial government for Investing in Canada Infrastructure Program funding, which would provide up to 83% funding for transit related projects if approved. This application is described in the May 2, 2019 report to Council and outlines that funds for new buses, expansion of the bus barn and software was applied for. If approved, these items would meet the needs for this new future transit option.

Similar to the other scenarios, this option was fine-tuned after the PIC based on actual drive times and comments received by the public. The final configuration is shown in Option C. Due to the fact that significant capital investment needs to occur before this option can be implemented, it is not recommended for use at the present time. However, Staff does feel strongly that this type of option is the future solution for providing efficient useful reliable transit service to the growing City of Woodstock. Unfortunately, it requires more buses in the fleet to handle the peak demands, a building expansion to house the buses during non-operational hours and the use of an app to get the best transit experience. This is an option that should be worked towards and the implementation of either the six (6) route/40 minute or seven (7) route/30 minute options will help transition towards this type of system. The introduction of on-route transfer points in the new systems will open the door to riders considering transferring at other locations than just the transit terminal. If the funding is approved, the purchase of an app will help riders get used to using it prior to it really being necessary for Option C. Another advantage to Option C is that it is the only option that is able to provide public transit to the growing industrial area on the east side of the city along County Road 4.





COSTING

There are cost implications for the proposed changes. All options require a onetime capital cost for re-signing the bus stops and relocating bus shelters to match the new routes. Some of the options may also require additional capital costs and/or operational costs. Financial impacts for each scenario are detailed below.

SIX (6) ROUTES/ 30-MINUTE CYCLE

Although neither the number of buses nor the timing of the routes is changing in this scenario, there are costs involved. Since the routes would have to be changed from their current configuration, bus stops and shelters would have to be relocated. This work is estimated to cost approximately \$25,000 to \$35,000.

SIX (6) ROUTES/ 40-MINUTESCYLE

Since there are no additional buses required on the road, there are no operational costs associated with this scenario. Similar to the six (6) routes/30-minute cycle scenario, bus stops and shelter will have to be relocated to fit the new routes for an estimated cost of \$25,000 to \$35,000.

If it is decided to increase the peak hour service to shorten the 40-minute cycle time, there would be an operational cost since an additional six buses would have to be on the road during the peak hours. The net operational cost for these buses is estimated to be approximately \$500,000 to \$550,000 per year assuming peak hours of 6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m. This peak hour service would also require a capital investment of approximately \$1,200,000 for two new buses and \$600,000 for an expansion to the existing bus barn to shelter the buses during off hours. As mentioned previously, Staff has made an application to the provincial and federal governments for 83% funding for these items

SEVEN (7) ROUTES/ 30-MINUTE CYCLE

Due to the addition of a seventh bus on the road, this option automatically has an operational impact. It is estimated that the net cost of the addition of a seventh bus on the road during the existing operating hours will be approximately \$250,000 to \$300,000 per year. Staff feels that there are enough buses currently in the fleet to safely commit to having another bus on the road so there are no other capital costs to this scenario other than the \$25,000 to \$35,000 for bus stop signage and shelter relocations.

OTHER OPTIONS

The future scenario, Option C, has both operational and capital costs associated with it. Operationally there are the costs of having four additional buses on the road during peak hours. This option requires an additional 13,400 annual bus hours estimated to increase the operating

budget approximately \$750,000. In regards to capital budget impacts, there is a greater cost for bus stop and shelter re-signage and relocations estimated to be around \$80,000 to \$100,000. This would also present an opportunity to re-brand the bus-stop markers for a new & improved look. With many re-located shelters moving to main street corridors this will provide protection of customers transferring on street & permit better advertising possibilities to help offset costs. Also, similar to the option of adding peak buses to Option A, the purchase of two additional buses and building expansion will be required for a cost of approximately \$1,800,000. To work most efficiently and be as user friendly as possible, the purchase of a rider app is also strongly recommended, which will cost about \$650,000. As mentioned previously, the buses, building expansion and app are all part of a funding application to the provincial and federal government for 83% funding. Staff has been notified that the province has approved the application at its level and moved it up the federal level for review and approval.

SURVEY RESULTS

Transit surveys were made available to the public to complete on the buses, at the Public Information Centre meetings and online on the City's website. There were a total of 165 surveys returned.

Seventy-five percent of the respondents use public transit on a regular basis. The majority (58%) are not satisfied with the current bus routes. A large majority (87%) would ride transit more often if it was more convenient. When asked what makes transit convenient, the top 3 answers were: frequency at 67%, assessable (41%) and providing service to currently unserved areas (35%). Of the options presented, Option 7 showing a possible future network was the most preferred at 28% followed by Option 6, with seven (7) routes at 30-minute cycles, with 26% approval.

A summary of the questions on the survey form is shown on the table below:

TRANSIT STUDY

2019 Transit Survey – Feedback Data Report

	yes	no					
Do you use transit?	130	35					
Satisfied with current routes?	59	83					
If more convenient would you ride?	127	19					
Reasons for taking transit	shop	work	leisure	don't drive	go green	school	
	60	42	73	53	10	12	
	%	%	%	%	%	%	
What makes transit convenient?	clean	new area	frequency	assessible	other		
	40	58	110	68	16		
	%	%	%	%	%		
Two most preferred options?	#1	#2	#3	#4	#5	#6	#7
	14	10	22	10	13	39	42
	%	%	%	%	%	%	%
Comment Section	yes						
Reference to toyota service?	16						
Extention of late evening hours?	18						
Sunday service?	24						
Other ?	52						
Total number of feedback forms receive	165						

TRANSIT STUDY

	yes	no					
Do you use transit?	130	35					
Satisfied with current routes?	59	83					
If more convenient would you ride?	127	19					
Reasons for taking transit	shop	work	leisure	don't drive	go green	school	
	60	42	73	53	10	12	
	%	%	%	%	%	%	
What makes transit convenient?	clean	new area	frequency	assessible	other		
	40	58	110	68	16		
	%	%	%	%	%		
Two most preferred options?	#1	#2	#3	#4	#5	#6	#7
	14	10	22	10	13	39	42
	%	%	%	%	%	%	%
Comment Section	yes						
Reference to toyota service?	16						
Extention of late evening hours?	18						
Sunday service?	24						
Other ?	52						
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RECOMMENDATIONS

Although Staff anticipates that a system similar to that presented in Option C is the preferred option to best handle the continued growth of the City of Woodstock and increase the transit system's reliability and usefulness to its riders, the infrastructure is currently not in place to implement this plan. Instead, implementation of either Options A or B will address the immediate goal of bringing transit service to over 90% of the residential areas in the city. The introduction of on-route transfers and, if funding is approved, the use of a rider app will also enable the use of either Option A or B to transition into a future transit system similar to Option C.

In order to address the immediate need to expand the transit system service area, Staff recommends Option B, seven (7) routes with 30-minute cycles. Both systems expand the service into new residential and industrial areas and should provide reliable on-time service. Staff feels that the expansion of area and reliability will make the Woodstock Transit system more attractive to its residents resulting in increased ridership. Increased ridership will result in increased revenue through fares and gas tax provisions. Although Option B requires an additional operational cost for another bus to be on the road, it retains the existing 30-minute cycle time. The six (6) route 40-minute cycle option increases the length of time between buses to a point that Staff feels that it will diminish the attractiveness or usefulness to its users. However, this option becomes attractive if peak buses are added to Option A to decrease the cycle time to 20 minutes; although the additional costs, capital and operational, will be greater than those for Option B. Both Options are anticipated to have the same base capital cost for sign and shelter relocations and replacements.