

## Document 1A

### EVALUATION OF LRT CORRIDOR OPTIONS

The initial step in an Environmental Assessment (EA) is the review of LRT corridor options to assess the environmental effects of each option in order to make an informed decision. As such, the study identified 13 LRT corridor options covering a broad area north and south of Kanata as shown in Figures 1 and 2. To minimize environmental impacts, existing transportation corridors were identified in developing these options, consisting of road, abandoned and active rail corridors and combinations thereof. North of Highway 417, four out of six corridors included the use of the active Renfrew Subdivision rail line, while south of Highway 417, two out of three corridors included the use of the former Carleton Place Subdivision rail line, now the Transcanada Trail. Along and near Highway 417, four corridors were identified, including the Campeau Drive corridor, as well as north, south, and in the median of Highway 417.

These LRT corridors were subject to an assessment and evaluation based on evaluation criteria such as ridership, network connectivity, the natural and social environment, city building opportunities, and cost. A comparative evaluation methodology was followed, with each option ranked from least preferred to most preferred among the options using the criteria identified in Table 1. This method allows for the consideration of trade-offs in comparing one alternative against another.

Table 1 summarizes the evaluation and ranking by criteria resulting in Corridor 8, on the north side of Highway 417 ranking highest in meeting all the criteria and is the Preliminary Preferred Corridor. The benefits of this corridor include the following:

- Provides a central transit spine equally supporting all of Kanata
- Supports the future March Road and Fernbank bus rapid transit (BRT) corridors and other north-south bus routes
- No significant environmental or social impacts
- Supports development objectives along route
- Significant portions of this corridor is being protected through previous EA studies
- Cost effective to build and operate

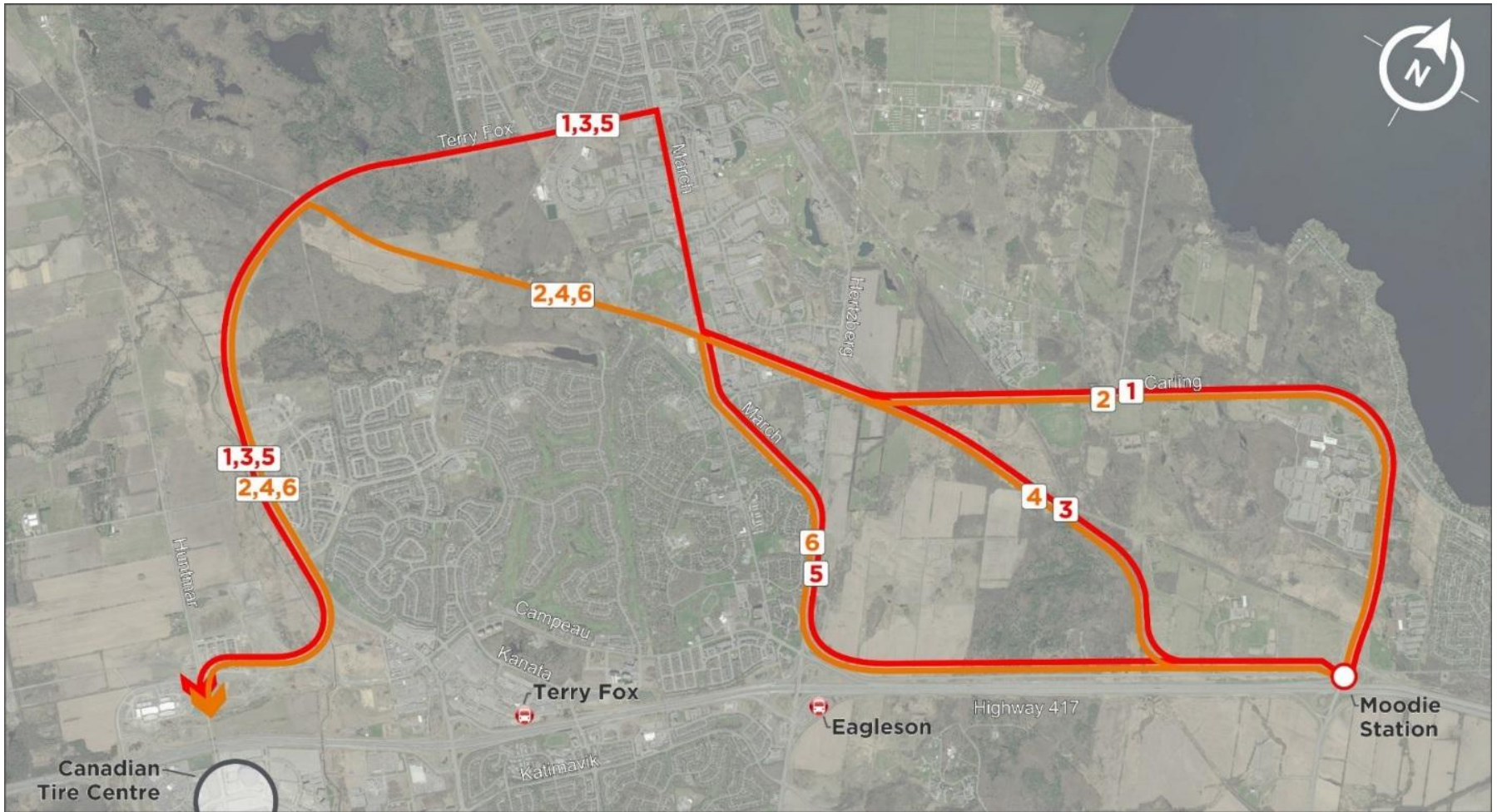


Figure 1: LRT Corridor Options for North Kanata

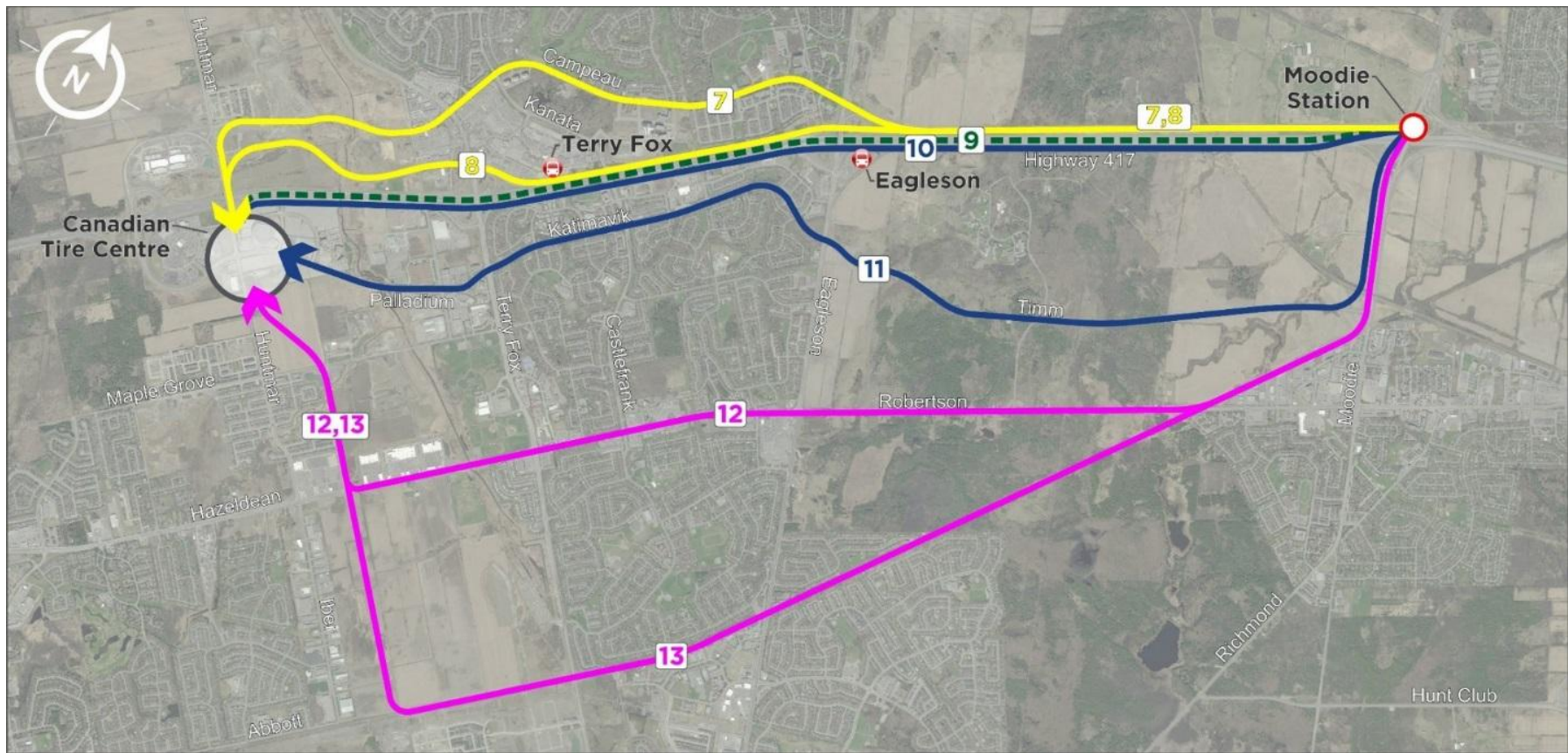


Figure 2: LRT Corridor Options for Kanata Central and South



Table 1: LRT Corridor Evaluation

	Criteria	Ridership Potential & Network Connectivity	TOD & City Building Opportunities	Natural Environment Impacts	Social Environment Impacts	Construction Complexity	Capital & Operating Costs	Summary
Corridor Options	1	- High employment & population centres - Limited transit connections	- Serves DND and Kanata North Business Park very well	- Natural habitat impact	- Requires duplicate bus service across Greenbelt	- Complex to build and operate	- Costly to build and operate	
		▲	●	■	▲	■	■	
		<b>Not carried forward</b> - Serves the Carling Campus and North Kanata but will put development pressure on the natural area in the northwest. Town Centre and South Kanata are not well served, requiring bus service to remain along Highway 417. The long route would require conversion of part of the March Road BRT and would be complex and expensive to construct and operate.						
	2	- Moderate employment & population centres - Limited transit connections	- Serves DND and a portion of Kanata North Business Park	- Natural habitat impact	- Requires duplicate bus service across Greenbelt	- Moderately to build	- Costly to build and operate	
		▲	▲	■	▲	▲	■	■
		<b>Not carried forward</b> - Serves the Carling Campus and a portion of Kanata North as the existing rail corridor bypasses much of the development and will put pressure on the natural area in the northwest. Town Centre and South Kanata are not well served, requiring bus service to remain along Highway 417. The long route would be expensive to construct and operate.						
	3	- High employment & population centres - Limited transit connections	- Serves Kanata North Business Park very well	- Natural habitat impact	- Requires duplicate bus service across Greenbelt - New barrier in Greenbelt introduced	- Moderately complex to build	- Costly to build and operate	
		▲	●	■	■	▲	■	■
		<b>Not carried forward</b> - Serves a portion of North Kanata but will put development pressure on the natural area in the northwest. Town Centre and South Kanata are not well served, requiring bus service to remain along Highway 417. The greenbelt is impacted with the upgrade of the existing rail corridor to support LRT. The long route would require conversion of part of the March Road BRT and would be expensive to construct and operate.						
	4	- Low employment & population centres - Limited transit connections	- Serves a portion of the Kanata North Business Park	- Natural habitat impact	- Requires duplicate bus service across Greenbelt - New barrier in Greenbelt introduced	- Moderately complex to build	- Costly to build and operate	
		▲	■	■	■	▲	▲	■
		<b>Not carried forward</b> - Serves a portion of North Kanata, but the existing rail corridor bypasses much of the development and will put pressure on the natural area in the northwest. Town Centre and South Kanata are not well served, requiring bus service to remain along Highway 417. The greenbelt is impacted, as the existing rail corridor would be fully fenced and impermeable. The long route would be moderately expensive to construct and operate.						



9	- Low employment & population centres - Good transit connections balancing needs of north and south Kanata	- Serves Town Centre and Mixed-use centre	- Minimal natural habitat impact	- Does not require duplicate bus service across Greenbelt	- Complex to build - Disrupts Hwy 417	- Cost effective to build and operate	
	▲	●	●	▲	■	●	▲
	<b>Not carried forward</b> - This highway median route would be short and direct, but does not allow for good bus and pedestrian connections. The highway median would need to be widened, pushing travel lanes further out and impacting development on both sides of the highway. Complex structures would be needed to transition into and out of the median. Capital and operating costs are relatively modest even with the complex transitions at either end.						
10	- Low employment & population centres - Good transit connections balancing needs of north and south Kanata	- Serves Town Centre and Mixed-use centre	- Minimal natural habitat impact	- Does not require duplicate bus service across Greenbelt - Crossing Hwy 417 impacts Greenbelt - Significant property impacts due to limited space	- Moderately complex to build	- Cost effective to build and operate	
	▲	●	●	▲	▲	●	▲
	<b>Not carried forward</b> - There is limited space along the south side of the highway for the LRT and supporting bus transfer stations. There would be significant impacts for the existing development. The LRT would cross the highway near Moodie, impacting the greenbelt. This central route supports North and South Kanata, but not as well as Corridor #8. Capital and operating costs are modest, with a moderate level of complexity.						
11	- Low employment & population centres - Limited transit connections	- Serves boundary of Town Centre and Mixed-use centre	- Moderate natural habitat impact	- Requires duplicate bus service across Greenbelt - Crossing Hwy 417 impacts Greenbelt	- Moderately complex to build	- Moderate cost to build and operate	
	■	▲	▲	▲	▲	▲	■
	<b>Not carried forward</b> - The narrow right-of-way along Timm and Katimivik would make implementation challenging. Creating stations with good bus transfers would also be difficult in this developed corridor. The corridor borders the edge of the Town Centre and Palladium area. There are some natural and social environment impacts with the crossing of the greenbelt and impacts on the existing development along the route. Capital and operating costs are modest, with a moderate level of complexity.						
12	- Moderate employment & population centres - Limited transit connections	- Serves Hazeldean Main Street	- Moderate natural habitat impact	- Requires duplicate bus service across Greenbelt - Crossing Hwy 417 impacts Greenbelt	- Complex to build along developed corridor	- Moderate cost to build and operate	
	▲	▲	▲	▲	■	▲	■
	<b>Not carried forward</b> - The route would serve South Kanata. Town Centre and North Kanata are not well served, requiring bus service to remain along Highway 417. The segment through the developed Hazeldean Main Street would be challenging, increasing capital and operating costs. The corridor would have a significant impact on existing development. Capital and operating costs are modest, however there is a high level						

	of complexity in accommodating LRT in a developed corridor.						
13	- High employment & population centres - Limited transit connections	- Connects to targeted areas for intensification	- Moderate natural habitat impact	- Requires duplicate bus service across Greenbelt - Crossing Hwy 417 impacts Greenbelt New barrier in Greenbelt introduced	- Moderately complex to build	- Moderate cost to build and operate	
	▲	▲	▲	■	▲	▲	■
	<b>Additional analysis required</b> - This route would parallel the former rail corridor that contains the Trans-Canada Trail. It would have a significant impact on the Greenbelt. Town Centre and North Kanata are not well served, and bus service is required to remain along Highway 417. Challenge to accommodate bus transfer facilities. There is some potential to shape the development in Southwest Kanata, although most of the plans are already approved. Capital and operating costs are modest, with a moderate level of complexity.						

## **Document 1B**

### **SECONDARY EVALUATION OF LRT CORRIDOR OPTIONS**

Based on feedback from the first round of public consultation, there was significant public interest requesting a further review of LRT corridor options serving Kanata North and Kanata South. This was to account for the high employment area in the Kanata North Business Park as well as the intensification opportunities in the growing Kanata South and Stittsville area.

As such, a secondary round of evaluation was conducted on three LRT corridors (5, 8, 13) as well as their hybrid corridors (5a, 8a, 13a). The six corridor options (Figure 3) were then reviewed against the same evaluation criteria used earlier. For this evaluation however, ridership projections as well as City building opportunities were examined to further inform the evaluation. The corridor options shown in Figure 3 are as follows:

1. Corridor 5 – Hwy 417/March/Terry Fox/Palladium
2. Corridor 5a – Terminates at Innovation Park and Ride
3. Corridor 8 – North side of Hwy 417
4. Corridor 8a – Extended to Hazeldean Road
5. Corridor 13 – Moodie/TransCanada Trail/North-South Arterial/Palladium
6. Corridor 13a – Terminates at Robert Grant/Abbott



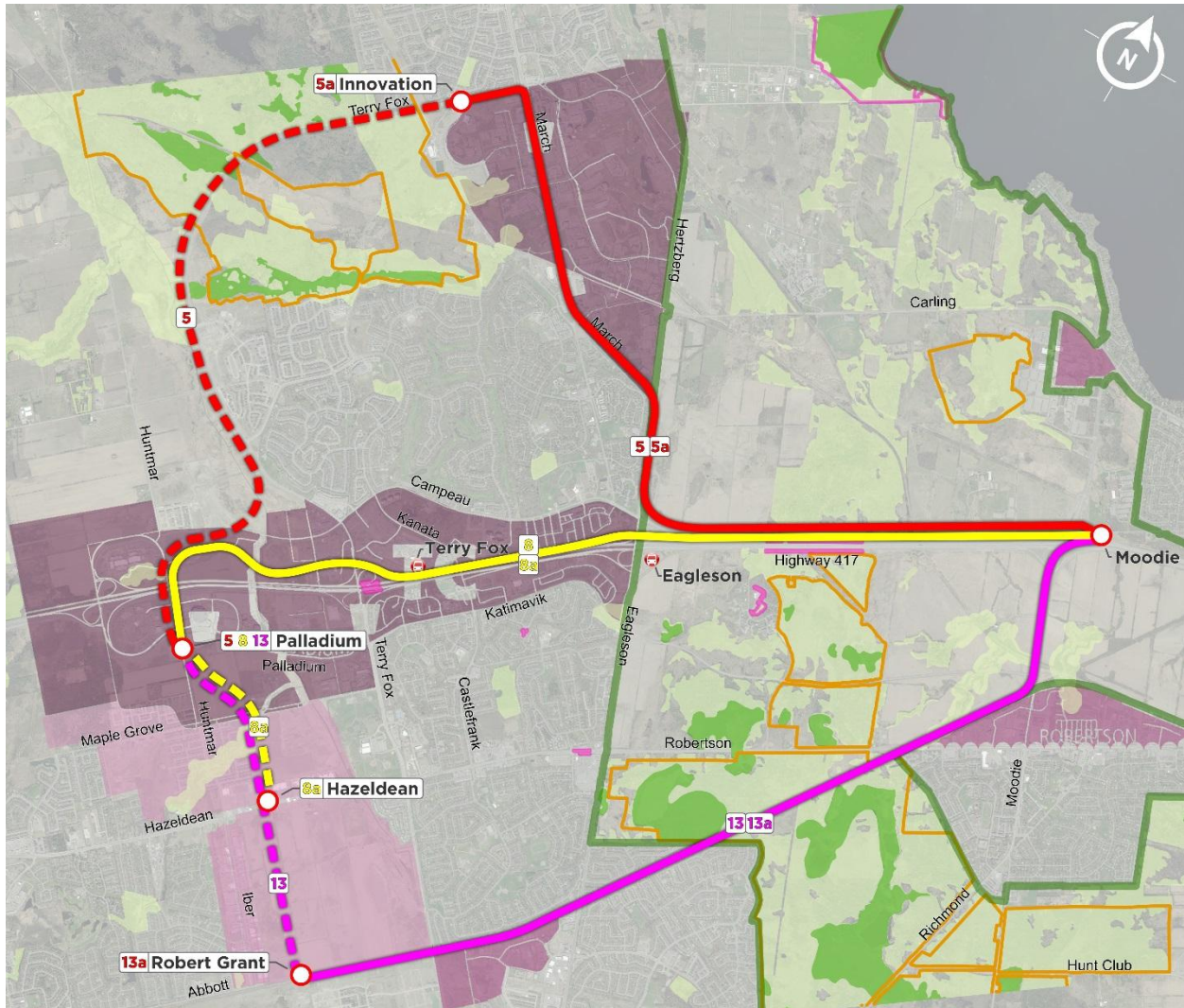


Figure 3: Secondary LRT Corridor Options

### Ridership Review

The City's EMME3 Regional Transportation Demand Model was used to review ridership for each of the six options. This model simulates transportation demand for the City and predicts travel demand based on various transportation network scenarios. Each of the six corridor options were used to model a scenario and predict ridership along the LRT route.

The results of the ridership review indicate that ridership is not a critical differentiator between the corridor options. While Table 2 below indicate that Corridors 13 and 13a rank high, the differences are less significant for the LRT volumes. All scenarios did however increase transit ridership when compared to the TMP's base case scenario.

Table 2: Ridership Modelling Results

<b>Corridor</b>	<b>Total Transit Volumes East of Moodie Screenline - Peak Period</b>	<b>LRT Volumes East of Moodie - Peak Period</b>	<b>Rank</b>
Base Scenario	11,359	8,616	-
5	13,505	10,720	5
5A	13,383	10,570	4
8	13,040	10,284	6
8A	13,529	10,853	3
13	15,162	13,140	1
13A	15,029	12,547	2

Furthermore, a transit oriented development (TOD) workshop with City Planning staff was conducted to review additional development potential as follows:

Corridor 5 – 1,400 jobs

Corridor 8 – 2,000 jobs, 200 households

Corridor 13 – 850 households

Among the three corridors, Corridor 8 has the highest development potential to attract more ridership to the LRT. With the ridership data and TOD potential added to the qualitative evaluation criteria, the comparative evaluation was applied to the six options and is summarized in Table 3.

Table 3: LRT Corridor Secondary Evaluation

Criteria	Corridor 5	Truncated 5 (to Maxwell Bridge Rd)	Corridor 8	Extended 8 (to Hazeldean)	Corridor 13	Truncated 13 (to Hazeldean)
<b>Ridership Potential and Network Connectivity</b>	- Longest travel time - Moderate transit connectivity at Eagleson to connect south Kanata to the LRT. - Moderate ridership	- Longest travel time and requires transfer at March/Egleson - Moderate transit connectivity at Eagleson to connect south Kanata to the LRT. Does not serve Palladium area. - Moderate ridership	- Shortest travel time - Greatest transit connectivity. North-south routes would connect to the LRT and provide good internal travel options. - Moderate ridership	- Shortest travel time - Greatest transit connectivity. North-south routes would connect to the LRT and provide good internal travel options. Also Connects into Hazeldean Main Street area - Moderate ridership	- Moderate travel time - Limited transit connectivity. Requires duplicate bus service across Greenbelt along Highway 417. - Highest ridership	- Longest travel time. Requires transfer at March/Egleson. - Limited transit connectivity. Requires duplicate bus service across Greenbelt along Highway 417. Does not serve Palladium area. - Highest ridership
	●	▲	●	●+	▲	■
<b>TOD &amp; City Building Opportunities</b>	- Connects to potential intensification opportunities as identified in the Official Plan and CDPs.	- Connects to edge of Mixed Use Centre west of March, and employment areas in Kanata North. Services the employment area evenly along March Road. Travels alongside edge of Urban boundary with no intensification foreseen, before connecting into the Mixed-	- Connects to edge of Mixed Use Centre west of March, and employment areas in Kanata North. Services the employment area evenly along March Road. Services the north but does not provide service to intensification opportunities south of Highway 417, or the	- Connects to Mixed Use Centre at March and runs centrally through the Mixed Use Centre until transitioning into the Employment / Mixed Use lands at the terminus. Provides spine along 417 for access to intensification opportunities both north and south of Highway 417.	- Travels along edge of Employment Lands and Arterial Mainstreet at Bell's Corners. West of Eagleson, the corridor serves some employment lands and Mixed Use, transitioning to the employment lands. Services the south, but does not provide service to intensification opportunities	- Travels along edge of Employment Lands and Arterial Mainstreet at Bell's Corners. West of Eagleson, the corridor serves some employment lands and Mixed Use, transitioning to the employment lands. Services the south, but does not provide service to intensification opportunities

		Use and Employment lands at the terminus. Services the north, but does not provide service to intensification opportunities south of Highway 417.	Palladium area.	Now connects to Hazeldean Main Street area and intensification opportunities.	north of Highway 417.	north of Highway 417, or at Palladium.
	●	▲	●	●+	▲	■
<b>Natural Environment Impacts</b>	- Greatest natural habitat impacts - Semi-urbanized context. Some new rail corridor interaction utilizes existing urbanized roadways elsewhere.	- Low natural habitat impact - Semi-urbanized context. Some new rail corridor interaction utilizes existing urbanized roadways elsewhere.	- Low natural habitat impact. - Urbanized context. No new rail corridor interaction, existing urbanized roadways elsewhere.	- Low natural habitat impact. - Urbanized context. No new rail corridor interaction, existing urbanized roadways elsewhere.	- Greatest natural habitat impacts. - Several crossings are away from development and introduce new urban form to a natural environment. Semi-urbanized context. Significant new rail corridor interaction, utilizes existing urbanized roadways elsewhere.	- Moderate natural habitat impacts. - Several crossings are away from development and introduce new urban form to a natural environment. Semi-urbanized context. Significant new rail corridor interaction, utilizes existing urbanized roadways elsewhere.
	■	●	●	●	▲	▲
<b>Social Environment Impacts</b>	- Greatest impact on archaeological potential - Crossing Greenbelt along Highway 417, transitions to	- Low impact on archaeological potential - Crossing Greenbelt along Highway 417, transitions to	- Low impact on archaeological potential - Crossing Greenbelt along Highway 417 and bundled	- Low impact on archaeological potential - Crossing Greenbelt along Highway 417 and bundled	- Greatest impact on archaeological potential - Crossing Greenbelt within existing road, railway, and	- Moderate impact on archaeological potential - Crossing Greenbelt within existing road, railway, and

	<p>March Road along westerly border of Greenbelt</p> <ul style="list-style-type: none"> <li>- Bundled with existing impermeable barrier (Highway 417), an approved infrastructure corridor, but provides new impermeable barrier along edge of Greenbelt</li> <li>- Transition to March Road interferes with identified view</li> <li>- Some interference with access to NCC pathways</li> <li>- Some impact on sensitive land uses</li> </ul>	<p>March Road along westerly border of Greenbelt</p> <ul style="list-style-type: none"> <li>- Bundled with existing impermeable barrier (Highway 417), an approved infrastructure corridor, but provides new impermeable barrier along edge of Greenbelt</li> <li>- Transition to March Road interferes with identified view</li> <li>- Some interference with access to NCC pathways</li> <li>- Some impact on sensitive land uses</li> </ul>	<p>with existing impermeable barrier and an approved infrastructure corridor</p> <ul style="list-style-type: none"> <li>- Travels along scenic arrival route, may pose minor interference</li> <li>- Negligible pathway interference.</li> <li>- No impact on sensitive land uses</li> </ul>	<p>with existing impermeable barrier and an approved infrastructure corridor</p> <ul style="list-style-type: none"> <li>- Travels along scenic arrival route, may pose minor interference</li> <li>- Negligible pathway interference.</li> <li>- No impact on sensitive land uses</li> </ul>	<p>trail corridors</p> <ul style="list-style-type: none"> <li>- New impermeable barrier in Greenbelt through Core Natural Area</li> <li>- Crossing of 417 at Moodie obstructs protected view along scenic arrival route</li> <li>- Significant pathway interference, displaces Transcanada Trail.</li> <li>- Significant impact on sensitive land uses</li> </ul>	<p>trail corridors</p> <ul style="list-style-type: none"> <li>- New impermeable barrier in Greenbelt through Core Natural Area</li> <li>- Crossing of 417 at Moodie obstructs protected view along scenic arrival route</li> <li>- Significant pathway interference, displaces Transcanada Trail.</li> <li>- Significant impact on sensitive land uses</li> </ul>
	▲	●	●	●	■	■
<b>Construction Complexity</b>	<ul style="list-style-type: none"> <li>- Complex to build and operate</li> <li>- High # of properties with potential to cause contamination</li> </ul>	<ul style="list-style-type: none"> <li>- Moderately complex to build</li> <li>- Moderate # of properties with potential to cause contamination</li> </ul>	<ul style="list-style-type: none"> <li>- Minimally complex to build</li> <li>- Low # of properties with potential to cause contamination</li> </ul>	<ul style="list-style-type: none"> <li>- Minimally complex to build</li> <li>- Low # of properties with potential to cause contamination</li> </ul>	<ul style="list-style-type: none"> <li>- Moderately complex to build</li> <li>- Moderate # of properties with potential to cause contamination</li> </ul>	<ul style="list-style-type: none"> <li>- Moderately complex to build</li> <li>- Moderate # of properties with potential to cause contamination</li> </ul>
	■	▲	●	●	▲	▲
<b>Capital &amp;</b>	- Costly to build and	- Costly to build and	- Cost effective to build and	- Cost effective to build and	- Moderate cost to build	- Cost effective to build and



Operating Costs	operate	operate	operate	operate	and operate	operate
	■	▲	●	▲	▲	●
<b>SUMMARY</b>	■	▲	●	●+	■	■

For this evaluation, Corridor 8a extending to Hazeldean Road (Figure 4) ranked highest overall and is the preferred corridor as it provides these additional long term benefits:

- Maximizes ridership by connecting more directly to the development around Hazeldean Road, whereas the Canadian Tire Centre, on its own, has comparatively low ridership except during events.
- Creates a more efficient transit network with an LRT on a structure in this section as it avoids conflicts with major cross streets.
- Maximizes connectivity with the future east-west transit priority corridor serving Stittsville as well as the future bus rapid transit corridor serving Fernbank lands.
- Maximizes opportunities for transit-oriented development on vacant lands surrounding the LRT corridor.
- More cost-effective as it avoids building a very expensive terminus at the Canadian Tire Centre connecting LRT to a grade separated BRT on a structure as envisioned in the City's TMP.



Figure 4: Preferred Corridor

## **Document 1C**

### **LIGHT MAINTENANCE AND STORAGE FACILITY SITE OPTIONS EVALUATION**

Although the 2017 Council approved Confederation Line West LRT Extension to Moodie Planning and EA Study is protecting for an ultimate Light Maintenance and Storage Facility (LMSF), the location of the LMSF was confirmed through the Kanata LRT EA study. This study identified alternate LMSF site options in Kanata to explore if a more suitable location to serve Kanata LRT was available and if LMSF operations would further improve at this alternate site. Accordingly, eight sites (Figure 5), as well as the Moodie LMSF site, were identified for evaluation. Selection of the sites were based on the following land characteristics:

- Primarily level surface and vacant
- Minimum 12 hectares contained in one land parcel preferred
- Avoids geographical, environmental and historical importance
- Within 750 m of the LRT corridor
- Accommodates an effective design and track layout

Based on four primary categories, site evaluation criteria is described below on Table 4, while Table 5 describes the impact assessment by criteria for each site and each criteria is ranked according to how it best meets the criteria.

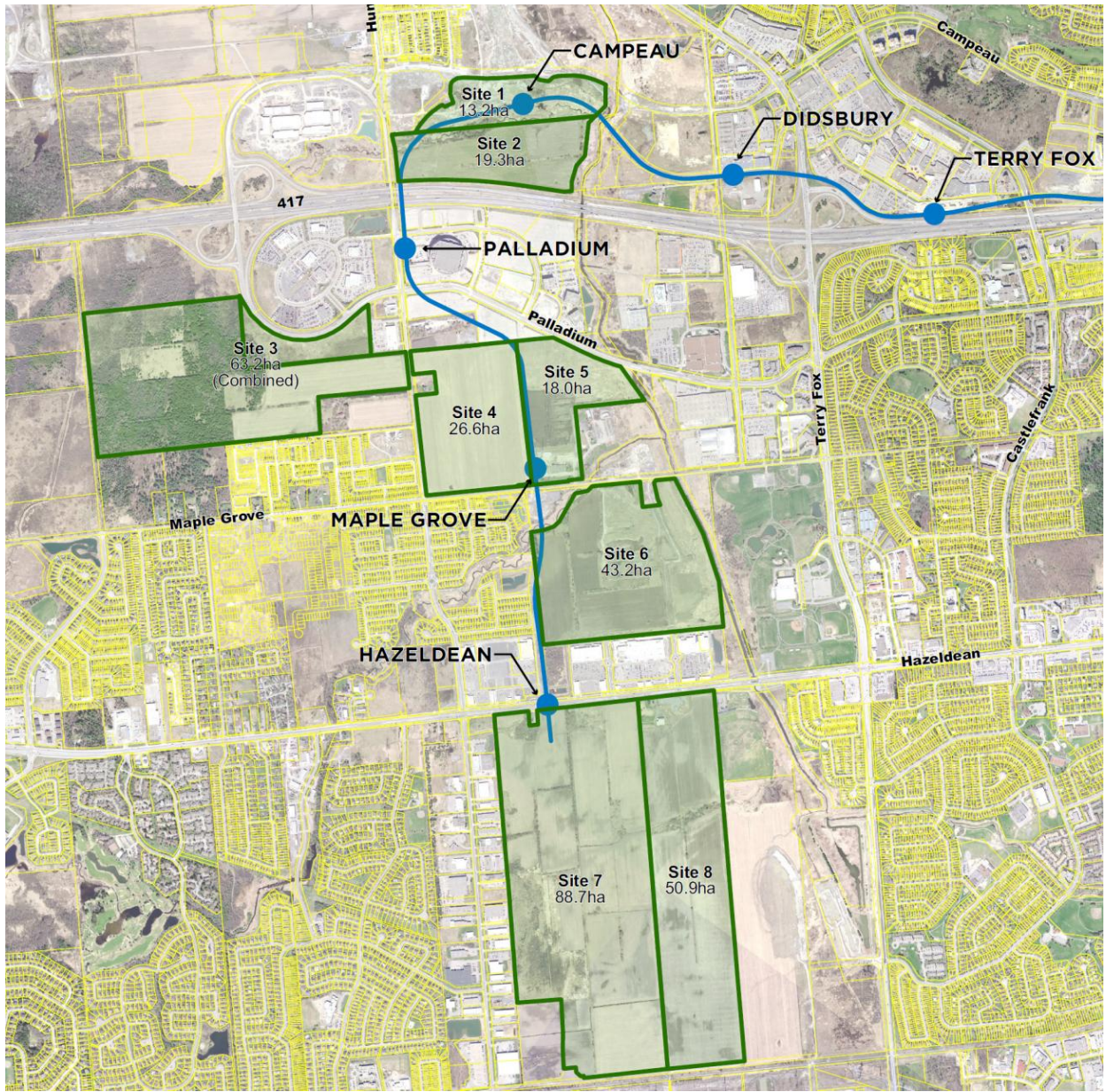


Figure 5: LMSF Site Options



Table 4: LMSF Site Evaluation Criteria

Criteria	Indicator/Measurement
<b><i>Social Environmental Characteristics</i></b>	
Effects to local residents	Minimizes effects on visual intrusion, noise air quality, vibration
Site safety	Ability to restrict/control access to the LMSF
Transportation network	Minimizes effects on existing and future transportation network.
Existing land uses	Minimizes effects on existing and planned land uses
Heritage / Culture	Minimizes effects on areas identified or having potential for archaeological or cultural significance
<b><i>Bio-Physical Environmental Characteristics</i></b>	
Soil types	Geotechnical characteristics to support a facility of this type
Contaminated Materials	Minimizes potential to encounter contaminated materials
Key natural features	Minimizes effects on key terrestrial/aquatic systems and features, including SAR
Greenbelt	Minimizes effects on Greenbelt (core natural areas, linkages, views and vistas, lighting)
Floodplains	Lowest proximity to floodplains and the possibility of flooding
<b><i>Facility Operations</i></b>	
LMSF Site Servicing	Availability and ease of providing site services (hydro, water, gas, sewer) to the LMSF site.



LRT Operations	Provides operational flexibility, minimizes deadhead time
<b>Economics</b>	
Property Ownership and Acquisition	Minimizes costs based on land use types and number of property owners

Table 5: LMSF Impact Assessment of Site Options

Site Number	Moodie	1 Minto	2 Broccolini	3 South of car park	4 Urbandale	5 Ottawa Works yard	6 Richcraft	7 Fernbank West	8 Fernbank East
<b>Effects to local residents</b>	●	■	●	●	■	■	■	■	■
	No adjacent residential development	Adjacent to residential development	No adjacent residential development	Can be buffered from residential development	Planned for residential development	Adjacent to planned residential development	Planned for residential development (site plan approval)	Planned for residential development	Planned for residential development
<b>Site safety</b>	●	▲	●	●	▲	●	▲	▲	▲
	Good ability to restrict/control access to the LMSF	Moderate ability to restrict/control access to the LMSF due to proximity to residential development and access	Good ability to restrict/control access to the LMSF	Good ability to restrict/control access to the LMSF	Moderate ability to restrict/control access to the LMSF due to surrounding residential development	Good ability to restrict/control access to the LMSF	Moderate ability to restrict/control access to the LMSF due to surrounding residential development	Moderate ability to restrict/control access to the LMSF due to surrounding residential development	Moderate ability to restrict/control access to the LMSF due to surrounding residential development
<b>Transportation Network</b>	●	▲	▲	■	▲	●	▲	●	▲
	Low impacts on existing and future transportation network	Moderate impacts on transportation network. Restricts access opportunities to adjacent lands	Moderate impacts on transportation network. Difficult site access	High impacts on transportation network. Lead tracks would need to be grade separated crossing several roads and pathways	Moderate impacts on transportation network. Tracks are elevated and access to an at grade LMSF would be difficult	Low impacts on existing and future transportation network	Moderate impacts on transportation network accessing surrounding development and crossings planned development	Low impacts on existing and future transportation network if LMSF is bundled with Robert Grant Ave.	Moderate impacts on transportation network accessing surrounding development and crossings planned development
<b>Land uses</b>	▲	■	●	■	■	●	■	■	■
	Requires small amount of land from NCC (currently leased to Wesley Clover Park) but would not disrupt operations	Conflicts with pending site plan submission	No current site plan applications	Conflicts with pending site plan submission	Conflicts with pending site plan submission	No current site plan applications	Conflicts with draft approved site plan submission	Conflicts with pending site plan submission	Conflicts with pending site plan submission
<b>Heritage / Culture</b>	●	●	■	●	●	●	●	●	▲



	Services available	Services available	Currently unserved	Services available	Services available	Services available	Services available	Services available	Services available
<b>Property</b>	●	●	●	▲	●	●	●	●	●
	Single owner – limited land requirements	Single owner	Single owner	Multiple owners	Single owner	Single owner	Single owner	Single owner	Single owner
<b>LRT Operations</b>	●	▲	▲	■	▲	▲	▲	▲	▲
	Consolidates system operations, dispatch, maintenance and storage requirements	Additional system operational requirements for dispatch, storage and maintenance	Additional system operational requirements for dispatch, storage and maintenance	Additional system operational requirements for dispatch, storage and maintenance. Longest deadhead distance	Additional system operational requirements for dispatch, storage and maintenance	Additional system operational requirements for dispatch, storage and maintenance	Additional system operational requirements for dispatch, storage and maintenance	Additional system operational requirements for dispatch, storage and maintenance	Additional system operational requirements for dispatch, storage and maintenance

Results of the evaluation indicate that the Moodie site ranks highest in best meeting the criteria, although Site 5 (Ottawa Works Yard) and Site 7 (Fernbank West) rank a very close second. Since the Moodie LMSF site (Figure 6) is to be constructed for the Stage 2 LRT and will be operational for some time before the Kanata LRT is implemented, it is the preferred site. Key features of this site include:

- No impact to local residents
- No impact to the transportation network or any planned or existing land uses
- No significant site constraint such as impacted soil, heritage features or floodplain
- Close to the LRT line
- Requires some NCC property
- Requires realignment of Corkstown



Figure 6: Moodie LMSF Site



## **Document 1D**

### **DIDSBURY AND PALLADIUM DRIVE LRT ALIGNMENT OPTIONS**

In response to stakeholder consultation and the direct impact on developable lands in the area between Didsbury and Palladium Drive, six alignment options (Figure 7) were developed:

1. Adjacent to Campeau
2. BRT EA modified
3. South of Feedmill Creek, East of Canadian Tire Centre
4. South of Feedmill Creek, West of Canadian Tire Centre
5. Parallel to Highway 417, West of Canadian Tire Centre
6. Parallel to Highway 417, East of Canadian Tire Centre

For Options 1 to 4, the corridor is elevated on a structure between Palladium Drive to the Carp River to avoid traffic conflicts and minimize impact on the developable land. To reduce costs, the Option 5 station just north of Highway 417 can be at grade as it is located on the southern edge of development lands west of the Carp River while Option 6 has one less station.

Evaluation criteria was chosen based on their ability to determine quantifiable and qualitative indicators important to compare alternatives. A comparative evaluation methodology was followed, with each alternative ranked from least preferred to most preferred among the six options. This method allows for the consideration of trade-offs in comparing one alternative against another. Table 6 summarizes the evaluation and ranking.

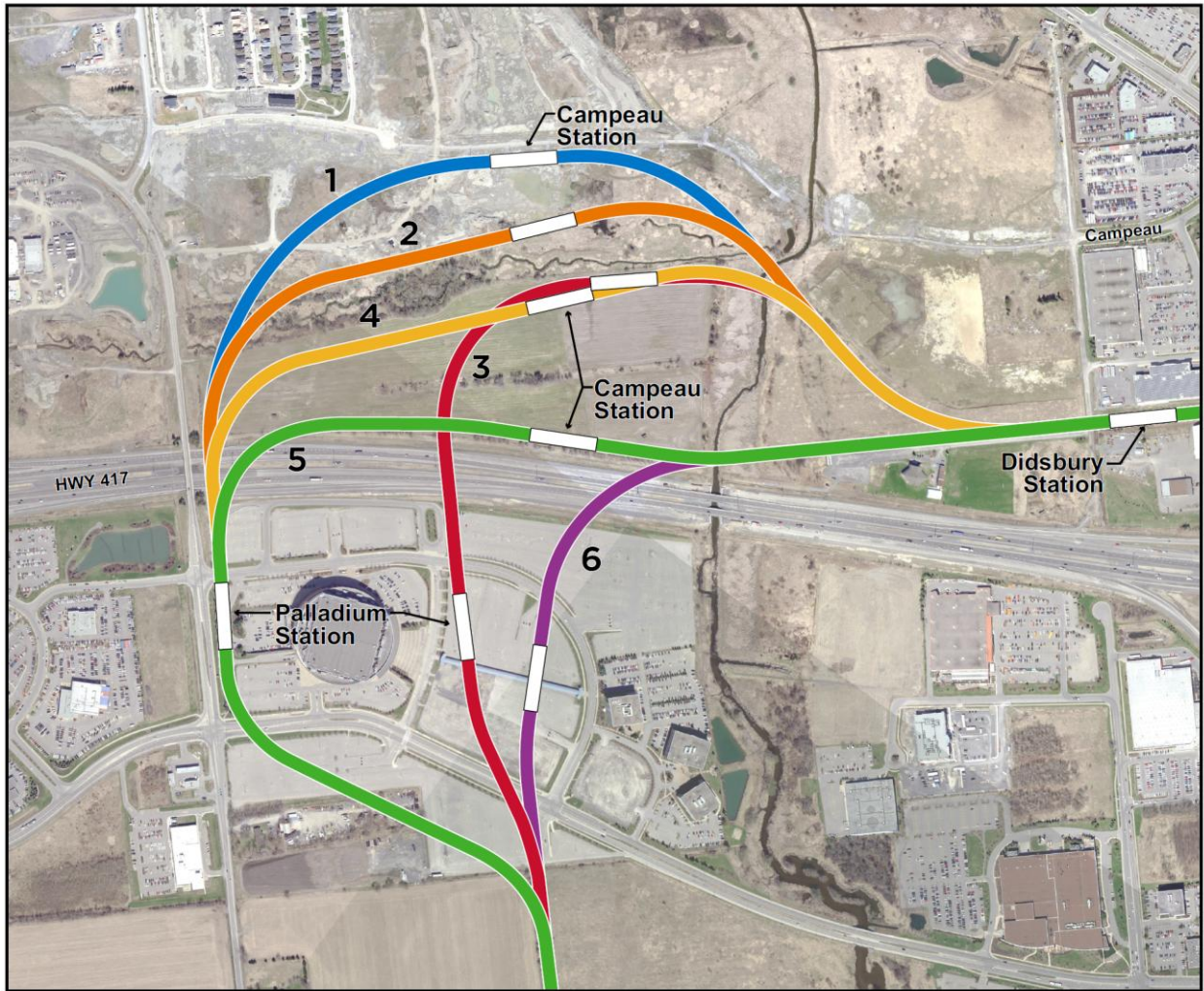


Figure 7: LRT Alignment Options

Table 6: Didsbury to Palladium LRT Corridor Options Evaluation

Criteria Category	Criteria	Indicators	1 - Adjacent to Campeau	2 - BRT EA Modified	3 - South of Feedmill, East of CTC	4 - South of Feedmill, West of CTC	5 - Parallel to Highway 417, West of CTC	6 - Parallel to Highway 417, East of CTC
Transportation system Compatibility	Compatibility with Existing and Future Road System	<ul style="list-style-type: none"> <li>Compatibility with existing and proposed road system</li> </ul>	<ul style="list-style-type: none"> <li>LRT assumed to be grade separated at all roadway crossings</li> </ul>	<ul style="list-style-type: none"> <li>LRT assumed to be grade separated at all roadway crossings</li> </ul>	<ul style="list-style-type: none"> <li>LRT assumed to be grade separated at all roadway crossings</li> </ul>	<ul style="list-style-type: none"> <li>LRT assumed to be grade separated at all roadway crossings</li> <li>Alignment requires adjustment of internal road system on Broccolini lands at Country Glen Way/E-W access from Huntmar.</li> </ul>	<ul style="list-style-type: none"> <li>Conflict with Roger Neilson Way and Carp River SWM access</li> <li>Campeau/Riverchase Station location adjacent to Highway 417; far from arterial road network; has some potential to tie-in with the internal road circulation system.</li> </ul>	<ul style="list-style-type: none"> <li>Conflict with Roger Neilson Way and Carp River SWM access</li> </ul>
	Compatibility with Existing and Future Transit Operations	<ul style="list-style-type: none"> <li>Ease of connections to existing and future local and rapid transit routes</li> </ul>	<ul style="list-style-type: none"> <li>On-street connections to routes on Campeau at Riverchase/Campeau Station are convenient</li> <li>West of CTC station provides good connections to local routes on Huntmar, Palladium</li> </ul>	<ul style="list-style-type: none"> <li>On-street connections to routes on Campeau at Riverchase/ Campeau Station require short walk</li> <li>West of CTC station provides good connections to local routes on Huntmar, Palladium</li> </ul>	<ul style="list-style-type: none"> <li>On-street connections to routes on Campeau at Riverchase/ Campeau Station require walk</li> <li>East of CTC station not as well located for long-term connections to local routes on Huntmar, Palladium</li> </ul>	<ul style="list-style-type: none"> <li>On-street connections to routes on Campeau at Riverchase/Campeau Station require walk</li> <li>West of CTC station provides good connections to local routes on Huntmar, Palladium</li> </ul>	<ul style="list-style-type: none"> <li>No connections to routes on Campeau for local access north of Highway 417</li> <li>West of CTC station provides good connections to local routes on Huntmar, Palladium</li> </ul>	<ul style="list-style-type: none"> <li>No connections to bus routes on Campeau for local access north of Highway 417</li> <li>East of CTC station not as well located for long-term connections to local routes on Huntmar, Palladium</li> </ul>
		<ul style="list-style-type: none"> <li>Ability to provide required footprint for bus-rail transfer facilities, including access, bus platform and lay-up space.</li> </ul>	<ul style="list-style-type: none"> <li>Riverchase/Campeau Station N/A</li> <li>West of CTC Station location has better opportunity and access for bus terminal.</li> </ul>	<ul style="list-style-type: none"> <li>Riverchase/Campeau Station N/A</li> <li>West of CTC Station location has better opportunity and access for bus terminal.</li> </ul>	<ul style="list-style-type: none"> <li>Riverchase/Campeau Station N/A</li> <li>East of CTC station location not as suited to support bus terminal.</li> </ul>	<ul style="list-style-type: none"> <li>Riverchase/Campeau Station N/A</li> <li>West of CTC Station location has better opportunity and access for bus terminal.</li> </ul>	<ul style="list-style-type: none"> <li>Riverchase/Campeau Station N/A</li> <li>West of CTC Station location has better opportunity and access for bus terminal.</li> </ul>	<ul style="list-style-type: none"> <li>East of CTC Station location not as suited to support bus terminal.</li> </ul>
	Multi-modal Integration	<ul style="list-style-type: none"> <li>Effectiveness of integration with other modes of travel, including walking, cycling, local transit, PPUJO and Park and Ride facilities</li> </ul>	<ul style="list-style-type: none"> <li>Campeau/Riverchase station has direct arterial road frontage, offers good opportunity to provide an integrated service with local transit running along Campeau Drive and existing/proposed cycling facilities.</li> <li>Station on west side of CTC offers a good opportunity to provide an integrated service with local transit running</li> </ul>	<ul style="list-style-type: none"> <li>Campeau/Riverchase station located in proximity to arterial road, offers good opportunity to provide with existing/proposed cycling facilities; integration with local transit is reduced.</li> <li>Station on west side of CTC offers a good opportunity to provide an integrated service with local transit running along Huntmar Road and existing/proposed</li> </ul>	<ul style="list-style-type: none"> <li>Campeau/Riverchase station located south of Feedmill Creek, reducing potential for integration with surrounding road/pathway network.</li> <li>Station on east side of CTC more challenging to integrate with local transit routes and existing/proposed cycling facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Campeau/Riverchase station located south of Feedmill Creek, reducing potential for integration with surrounding road/pathway network.</li> <li>Station on west side of CTC offers a good opportunity to provide an integrated service with local transit running along Huntmar Road and existing/proposed pedestrian/cycling facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Campeau/Riverchase station located on south edge of development lands further from road network and pathways, decreasing integration opportunities.</li> <li>Station on west side of CTC offers a good opportunity to provide an integrated service with local transit running along Huntmar Road and existing/proposed pedestrian/cycling facilities.</li> </ul>	<ul style="list-style-type: none"> <li>No station north of Highway 417, much reduced opportunities for multi-modal integration.</li> <li>Station on east side of CTC more challenging to integrate with local transit routes and existing/proposed cycling facilities.</li> </ul>

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			along Huntmar Road and existing/proposed pedestrian/cycling facilities.	pedestrian/cycling facilities.				
		· Compatibility with existing and future bicycle/pedestrian networks	· Compatible with existing/proposed facilities	· Compatible with existing/proposed facilities. · Allows for integration with pathway along north side of Feedmill Creek	· Compatible with existing/proposed facilities	· Compatible with existing/proposed facilities	· Conflicts with pathway leading from Roger Neilson to Carp River	· Conflicts with pathway leading from Roger Neilson to Carp River
	<b>Total Criteria Category Score</b>		●	●	▲	▲	▲	■
Ridership Potential	Maximize Ridership Potential	· LRT Geometry	· Provides for good alignment geometry, with larger radius horizontal curves	· Provides for good alignment geometry, with larger radius horizontal curves	· Provides for good alignment geometry, with larger radius horizontal curves	· Tighter curve radius required at Highway 417 crossing	· Tighter curve radius required at Highway 417 crossing	· Provides for good alignment geometry, with larger radius horizontal curves
		· Ability to influence TOD potential	· Excellent potential at Palladium, potential at Campeau/Riverchase is longer term	· Excellent potential at Palladium, potential at Campeau/Riverchase is longer term.	· Good potential at both station locations.	· Good potential at Riverchase/Campeau, excellent potential at Palladium	· Excellent potential at both station locations.	· No potential north of Highway 417, good potential at Palladium.
		· Maximize catchment potential	· Excellent potential for both residential and employment/commercial access.	· Excellent potential for both residential and employment/commercial access.	· Further from residents north of Campeau; Station east of CTC reduces potential.	· Good potential but further from residential north of Campeau.	· Less potential at Campeau/Riverchase Station due to Highway on south side.	· Least due to one less station and location of Palladium Station east of CTC.
	<b>Total Criteria Category Score</b>		●	●	▲	▲	▲	■
Compatibility with Existing/Planned Communities	Compatibility with Existing/Planned Communities	· Displacement of, or loss of access to, existing and planned land uses	· Majority of land north of Highway 417 currently not developed · Formal planning application submitted by developer for lands north of Feedmill Creek, East of Huntmar · Located closest to existing residents north of Campeau. · Access to Campeau Drive from southern development lands requires additional underpass of LRT nearer to Huntmar. · Preliminary planning	· Majority of land north of Highway 417 currently not developed · Formal planning application submitted by developer for lands north of Feedmill Creek, East of Huntmar · Located closer to existing residents north of Campeau · Preliminary planning completed for lands south of Feedmill Creek with no formal applications submitted · Requires some site modifications formal	· Majority of land north of Highway 417 currently not developed · Preliminary planning completed for lands south of Feedmill Creek, no formal applications · Bisects development lands south of Feedmill Creek and located away from existing residents north of Campeau · Requires some site modifications and would displace existing pedestrian connection to Canadian Tire	· Majority of land north of Highway 417 currently not developed · Preliminary planning completed for lands south of Feedmill Creek with no formal applications submitted · Creates awkward development parcel south of Feedmill Creek and narrows remaining lands and located away from existing residents north of Campeau · Access to lands south of Feedmill Creek will require	· Bundled with Highway 417 · Majority of land north of Highway 417 currently not developed · Minimizes fragmentation of vacant development lands and located away from existing residents north of Campeau. · Requires some site modifications (formal connection), but can provide high level of service directly to Canadian Tire Centre	· No significant land uses north of Highway 417 along this alignment · Minimizes fragmentation of vacant development lands however located away from existing residents north of Campeau · Requires modification to existing pedestrian connection to Canadian Tire Centre · Requires reorganization of existing lots associated with Canadian Tire Centre for



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			<p>completed for lands south of Feedmill Creek with no formal applications submitted</p> <ul style="list-style-type: none"> <li>Requires some site modifications (formal connection), but can provide high level of service directly to Canadian Tire Centre</li> </ul>	<p>connection, but can provide high level of service directly to Canadian Tire Centre</p>	<p>Centre, but can provide a high level of service to Canadian Tire Centre</p> <ul style="list-style-type: none"> <li>Requires reorganization of existing lots associated with Canadian Tire Centre for development</li> </ul>	<p>an underpass of the LRT Line</p> <ul style="list-style-type: none"> <li>Requires some site modifications (formal connection), but can provide high level of service directly to Canadian Tire Centre</li> <li>Requires reorganization of existing lots associated with Canadian Tire Centre for Development.</li> </ul>		<p>development</p>
		<ul style="list-style-type: none"> <li>Compatibility with existing use of land</li> </ul>	<ul style="list-style-type: none"> <li>Bundled with existing transportation corridor along Campeau and Huntmar</li> <li>Elevated guideway require developer to adjust development plans of planned development to take place</li> <li>Limits frontage opportunities along Campeau Drive</li> <li>Allows for the two proposed access roads into the adjacent development lands to pass under the proposed guideway. An additional access from Huntmar may need to be adjusted as it will require an underpass of the guideway.</li> <li>Balances the service to the OP designated Mixed-Use Centre south of Highway 417</li> <li>Located within planned development areas and nearer to residents north of 417 and includes underutilized lands (ie. parking areas at Canadian Tire Centre)</li> </ul>	<ul style="list-style-type: none"> <li>Not bundled with existing transportation corridor north of highway 417</li> <li>Creates a shallower development parcel north of Feedmill Creek.</li> <li>Elevated guideway require developer to adjust development plans of planned development to take place</li> <li>Provides increased frontage opportunities along Campeau Drive</li> <li>Allows for the two proposed access roads into the adjacent development lands to pass under the proposed guideway</li> <li>Balances the service to the OP designated Mixed-Use Centre south of Highway 417</li> <li>Located within planned and development areas, and nearer to residents north of 417 and includes underutilized lands (ie. parking areas at Canadian Tire Centre)</li> </ul>	<ul style="list-style-type: none"> <li>Not bundled with existing transportation corridors north of 417</li> <li>Elevated guideway would bisect development lands to the north of Highway 417</li> <li>Does not impact planned development north of Feedmill Creek, but provides a lower level of service to planned community,</li> <li>Guideway would bisect the palladium area, posing challenge to potential future development</li> <li>Does not balance the service to the OP designated Mixed-Use Centre south of Highway 417</li> <li>Located within planned development areas, however away from residents north of 417 and includes underutilized lands (i.e. parking areas at the Canadian Tire Centre)</li> </ul>	<ul style="list-style-type: none"> <li>Not bundled with existing transportation corridor</li> <li>Elevated guideway could be integrated into future development plans for lands north of Highway 417</li> <li>Does not impact planned development north of Feedmill Creek, but provides a lower level of service to planned community</li> <li>Balances the service to the OP designated Mixed-Use Centre south of Highway 417</li> <li>Located within planned development areas, however away from residents north of 417 and includes underutilized lands (i.e. parking areas at the Canadian Tire Centre)</li> </ul>	<ul style="list-style-type: none"> <li>Bundled with existing transportation corridor along Highway 417 and Huntmar</li> <li>Access can be provided from Huntmar without a crossing of the LRT line or Feedmill Creek</li> <li>Located on the edge of planned development north of Highway 417</li> <li>Balances the service to the OP designated Mixed-Use Centre south of Highway 417</li> </ul>	<ul style="list-style-type: none"> <li>Not bundled with existing transportation corridors</li> <li>Located away from planned development north of 417 however includes underutilized lands (i.e. parking areas at the Canadian Tire Centre)</li> <li>Minimizes loss of and fragmentation of vacant development lands north of 417 and south of Feedmill Creek</li> <li>Guideway would bisect the palladium area development and will require reorganization of lands at the Canadian Tire Centre</li> <li>Does not balance the service to the OP designated Mixed-Use Centre south of Highway 417</li> <li>Includes underutilized lands (i.e. parking areas at the Canadian Tire Centre) however closer to the eastern edge.</li> </ul>

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	Urban Design Potential	<ul style="list-style-type: none"> <li>Ability to incorporate streetscaping improvements, public art</li> </ul>	<ul style="list-style-type: none"> <li>Station can be integrated with Campeau streetscape. Opportunity to leverage project to improve Campeau</li> </ul>	<ul style="list-style-type: none"> <li>Reduced public aspect and potential to improve public spaces</li> </ul>	<ul style="list-style-type: none"> <li>Minimal public aspect and potential to improve public spaces</li> </ul>	<ul style="list-style-type: none"> <li>Reduced public aspect and potential to improve public spaces</li> </ul>	<ul style="list-style-type: none"> <li>Reduced public aspect and potential to improve public spaces</li> </ul>	<ul style="list-style-type: none"> <li>No station provided north of Highway 417</li> </ul>
		<ul style="list-style-type: none"> <li>Ability to create/support vibrant public spaces</li> </ul>	<ul style="list-style-type: none"> <li>Proximity to Campeau is positive</li> <li>Highest potential to spur and support development in the area</li> </ul>	<ul style="list-style-type: none"> <li>Some ability but station primarily fronts private lands</li> </ul>	<ul style="list-style-type: none"> <li>Some ability but station primarily fronts private lands</li> </ul>	<ul style="list-style-type: none"> <li>Some ability but station primarily fronts private lands</li> </ul>	<ul style="list-style-type: none"> <li>Limited ability due to proximity to Highway</li> </ul>	<ul style="list-style-type: none"> <li>No station provided north of Highway 417</li> </ul>
		<ul style="list-style-type: none"> <li>Compatibility with existing visual environment</li> </ul>	<ul style="list-style-type: none"> <li>Greater visual impact due to proximity to residential; longer elevated guideway required</li> </ul>	<ul style="list-style-type: none"> <li>Can be designed to maximize compatibility with future visual environment</li> </ul>	<ul style="list-style-type: none"> <li>Can be designed to maximize compatibility with future visual environment</li> </ul>	<ul style="list-style-type: none"> <li>Can be designed to maximize compatibility with future visual environment</li> </ul>	<ul style="list-style-type: none"> <li>Can be compatible with future visual environment; potential for at-grade corridor along Highway 417. Longer flyover of Highway bundled with Huntmar Crossing.</li> </ul>	<ul style="list-style-type: none"> <li>Can be designed to maximize compatibility with future visual environment; Long flyover of Highway in proximity to river crossing.</li> </ul>
	<b>Total Criteria Category Score</b>							
<b>Social Environment</b>	Effects on Built Heritage Features and Archaeology	<ul style="list-style-type: none"> <li>Impact on identified and/or potential archaeological resources (i.e., area of land/feature which will be affected)</li> </ul>	<ul style="list-style-type: none"> <li>Lands have been previously assessed and mitigated of archaeological concern. No additional assessment required</li> </ul>	<ul style="list-style-type: none"> <li>Lands have been previously assessed and mitigated of archaeological concern. No additional assessment required</li> </ul>	<ul style="list-style-type: none"> <li>Portions of the corridor have been previously assessed and mitigated of archaeological concern. Undisturbed lands identified as possessing archaeological potential not previously mitigated will require Stage 2 field investigations</li> </ul>	<ul style="list-style-type: none"> <li>Portions of the corridor have been previously assessed and mitigated of archaeological concern. Undisturbed lands identified as possessing archaeological potential not previously mitigated will require Stage 2 field investigations</li> </ul>	<ul style="list-style-type: none"> <li>Portions of the corridor have been previously assessed and mitigated of archaeological concern. Undisturbed lands identified as possessing archaeological potential not previously mitigated will require Stage 2 field investigations</li> </ul>	<ul style="list-style-type: none"> <li>Portions of the corridor have been previously assessed and mitigated of archaeological concern. Undisturbed lands identified as possessing archaeological potential not previously mitigated will require Stage 2 field investigations</li> </ul>
		<ul style="list-style-type: none"> <li>Impact on identified heritage features including buildings and landscapes</li> </ul>	<ul style="list-style-type: none"> <li>No formally recognized cultural heritage resources are along this alignment. The alignment crosses a property with buildings over 40 years old, a cultural heritage evaluation report on 210 Huntmar Dr. is required.</li> </ul>	<ul style="list-style-type: none"> <li>No formally recognized cultural heritage resources are along this alignment. The alignment crosses a property with buildings over 40 years old, a cultural heritage evaluation report on 210 Huntmar Dr. is required.</li> </ul>	<ul style="list-style-type: none"> <li>No formally recognized cultural heritage resources are along this alignment. No further cultural heritage evaluation or assessment is required.</li> </ul>	<ul style="list-style-type: none"> <li>No formally recognized cultural heritage resources are along this alignment. The alignment crosses a property with buildings over 40 years old, a cultural heritage evaluation report on 210 Huntmar Dr. is required.</li> </ul>	<ul style="list-style-type: none"> <li>No formally recognized cultural heritage resources are along this alignment. The alignment crosses a property with buildings over 40 years old, a cultural heritage evaluation report on 210 Huntmar Dr. is required.</li> </ul>	<ul style="list-style-type: none"> <li>No formally recognized cultural heritage resources are along this alignment. The alignment crosses a property with buildings over 40 years old, a cultural heritage evaluation report on 210 Huntmar Dr. is required.</li> </ul>





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	<b>Total Criteria Category Score</b>		▲	▲	▲	▲	●	●
Utility Impact	Effects on Municipal Services and Utilities	• Effects on infrastructure and utilities including new water crossings	• Negligible	• Negligible	• Negligible	• Negligible	• Negligible	• Negligible
		• Effects on existing and new crossings	• Negligible	• Negligible	• Negligible	• Negligible	• Negligible	• Negligible
		• Effects on stormwater quality and quantity	• Negligible	• Negligible	• Negligible	• Negligible	• Negligible	• Negligible
Cost	Capital cost	• Estimated construction costs (including excavation/filling, lighting, signals, landscaping, associated infrastructure, construction complexity)	<ul style="list-style-type: none"> <li>• Length: 2906m</li> <li>• 2 Elevated Stations</li> <li>• Tangent crossing Highway 417</li> </ul>	<ul style="list-style-type: none"> <li>• Length: 2790m</li> <li>• 2 Elevated Stations</li> <li>• Tangent crossing Highway 417</li> </ul>	<ul style="list-style-type: none"> <li>• Length: 2121m</li> <li>• 2 Elevated Stations</li> <li>• Tangent crossing Highway 417</li> </ul>	<ul style="list-style-type: none"> <li>• Length: 2600m</li> <li>• 2 Elevated Stations</li> <li>• Skewed crossing Highway 417</li> </ul>	<ul style="list-style-type: none"> <li>• Length: 2443m</li> <li>• 1 Elevated, 1 At-grade Station</li> <li>• Skewed crossing Highway 417</li> </ul>	<ul style="list-style-type: none"> <li>• Length: 1589m</li> <li>• 1 Elevated Station</li> <li>• Skewed crossing Highway 417</li> </ul>
		• Potential throw away costs	• none	• none	• potential for conflict with future redevelopment of CTC lands	• none	• none	• potential for conflict with future redevelopment of CTC lands
	Land Acquisition cost and value	• Estimated value of all required land	<ul style="list-style-type: none"> <li>• New ROW required</li> <li>• Majority of impacts are along edge of parcels, some vacant development lands remain.</li> <li>• Comparatively moderate to other options</li> </ul>	<ul style="list-style-type: none"> <li>• New ROW required</li> <li>• Majority of impacts are along edge of parcels, some vacant development lands remain.</li> <li>• Comparatively moderate to other options</li> </ul>	<ul style="list-style-type: none"> <li>• New ROW required</li> <li>• Majority of impacts are along edge of parcels, some vacant development lands remain.</li> <li>• Comparatively large to other options</li> </ul>	<ul style="list-style-type: none"> <li>• New ROW required</li> <li>• Impacts are located central to parcels, bisecting development lands and creating new parcels.</li> <li>• Comparatively moderate to other options</li> </ul>	<ul style="list-style-type: none"> <li>• New ROW required</li> <li>• Majority of impacts are along edge of parcels, including Highway 417. some vacant development lands remain.</li> <li>• Comparatively low to other options</li> </ul>	<ul style="list-style-type: none"> <li>• New ROW required</li> <li>• Some Impacts are located central to parcels, bisecting development lands and creating new parcels.</li> <li>• Comparatively large to other options</li> </ul>
		<b>Total Criteria Category Score</b>	▲	▲	▲	▲	▲	●
<b>SUMMARY SCORE</b>			▲	●	▲	▲	▲	■



This evaluation results in Alignment Option 2 ranking highest overall and is the preferred corridor as it:

- Maximizes the developable area by tucking the LRT corridor tight to the Feedmill Creek limits.
- Maximizes connectivity and visibility as the station is integrated within the community and the planned road network.
- Minimizes land impacts as the LRT track and station are elevated allowing for development access, unobstructed road network and parking underneath the LRT.
- Makes best use of the previously approved rapid transit corridor, some of which has already been acquired.
- Provides for a tangent crossing of Highway 417, reducing construction cost and complexity.

## Document 1E

### CONSULTATION SUMMARY

Three sets of Agency, Business, and Public Consultation Group meetings were held over the course of the study, as well as two Public Open Houses. A summary of the public consultation dates, locations, comments and responses is noted below. In addition to the meetings held and summarized below, several stakeholder meetings were held to discuss specific components of the Recommended Plan and corridor selection, including landowners, developers, and agency partners.

The first round of consultation was held between May 11 and June 5, 2017. This round introduced the study objectives, the existing conditions within the study area, and the results of the initial corridor evaluation. Dates, locations and attendance of the consultation events were as follows:

<b>Agency Consultation Group</b>	<b>Business Consultation Group</b>	<b>Public Consultation Group</b>	<b>Public Open House</b>
May 11, 2017 9:30 to 11:30 a.m. Ottawa City Hall  26 individuals in attendance	May 16, 2017 1:30 to 3:30 p.m. Beaverbrook Library  12 individuals in attendance	May 16, 2017 6:30 to 8:30 p.m. Beaverbrook Library  10 individuals in attendance	June 5, 2017 5:30 to 8:30 p.m. Kanata Recreation Complex, Hall A  119 individuals in attendance

The second round of consultation was held between September 19 and September 21, 2017. This round presented additional corridor analysis, the preferred corridor, and the preliminary design alternative evaluation. Dates, locations and attendance of the consultation events were as follows:

<b>Agency Consultation Group</b>	<b>Business Consultation Group</b>	<b>Public Consultation Group</b>
September 19, 2017 9:30 to 11:30 a.m. Ottawa City Hall  24 individuals in attendance	September 21, 2017 1:30 to 3:30 p.m. Hazeldean Library  9 individuals in attendance	September 21, 2017 6:30 to 8:30 p.m. Hazeldean Library  11 individuals in attendance

The third round of consultation was held between November 21 and December 7, 2017. This round presented the alternative design evaluation and the preliminary recommended plan for the alignment and station location. Dates, locations and attendance of the consultation events were as follows:

<b>Agency Consultation Group</b>	<b>Business Consultation Group</b>	<b>Public Consultation Group</b>	<b>Public Open House</b>
November 21, 2017 9:30 to 11:30 a.m. Ottawa City Hall	November 23, 2017 2:30 to 4:30 p.m. Beaverbrook Library	November 23, 2017 6:30 to 8:30 p.m. Beaverbrook Library	December 7, 2017 5:30 to 8:30 p.m. Kanata Recreation Complex, Hall A
25 individuals in attendance	9 individuals in attendance	2 individuals in attendance	104 individuals in attendance

### **General Comments and Responses**

General support for Kanata LRT was expressed, with many attendees from the Public Open Houses stating that implementation should be as soon as possible.

Will Eagleson Park and Ride be removed in the future?

*No, Eagleson Park and Ride remains an important facility in the City's Ultimate Rapid Transit network. March Station, in Corridor 8 for example, will be located north of the Highway, with a pedestrian bridge/connection to the existing Park and Ride on the south side*

What is the next step now that the corridor has been selected?

*There is currently no funding in place, and the TMP identifies the project for implementation beyond 2031. The corridor will be protected as development occurs, and be ready for future TMP updates or availability of funding.*

Please ensure consideration is given to providing a Park and Ride at the terminus of the corridor, once selected.

*The intention is that the terminus, be it ultimate or interim, would have a Park and Ride. This will be examined after selecting the corridor.*

Significant investment is being made in Kanata North. These people need a viable transit alternative.

*The study team understands the importance of the Kanata North business community.*



*Regardless of the ultimate corridor chosen for LRT, the City of Ottawa will provide this community with reliable rapid transit.*

How will Kanata North be served?

*The LRT will transfer directly onto buses at March/Eagleson, which will use the approved median bus facility along March Road.*

Why are two (Moodie and Belfast) MSF sites required?

*From the perspective of the entire network, having two sites is a good thing. Trains can be stored at both ends of the line and feed into service faster.*

Will you put pedestrian and cycling facilities parallel to the tracks?

*Yes, or at least close by on adjacent or parallel streets.*

Is there consideration for people in Stittsville to get to Kanata North?

*By building this LRT spine, we will be putting in ribs – including March Road. It becomes a grid to serve the whole of Kanata and Stittsville. More opportunity for interchange, and more frequent service. The intention is that the bus service is frequent enough that passengers will not need to worry about making a connection, rather the transfers will happen fluidly.*

What would the frequency of trains be?

*During the peak period, trains could run up to 6 minutes apart. Similarly, the supporting bus transit network would be synchronized to run frequently enough to offer a high level of service so that users can rely on regular service. Free-body transfers at stations will also be sought to allow for all-door boarding and reduction of delays at transfer stations.*

## Document 1F

### KNBP AND DND LRT CORRIDOR OPTIONS

The Kanata North Business Park (KNBP) and Department of National Defence (DND) prefer corridors that directly serve their respective sites. To respond to their concerns, additional LRT corridor options that directly served KNBP and DND were developed and assessed.

#### Proposed LRT Corridor 1A Analysis

Subsequent to the secondary round of LRT corridor evaluations, DND requested a closer review of proposed Corridor 1 (Figure 8) as it directly serves the Carling Campus, Shirley's Bay, as well as KNBP. This corridor was further refined (Corridor 1A) to terminate at Innovation Park and Ride instead of Palladium Drive/Canadian Tire Centre as there was low ridership and therefore no additional benefit in extending the LRT further west beyond Innovation Park and Ride to terminate at Palladium Drive.

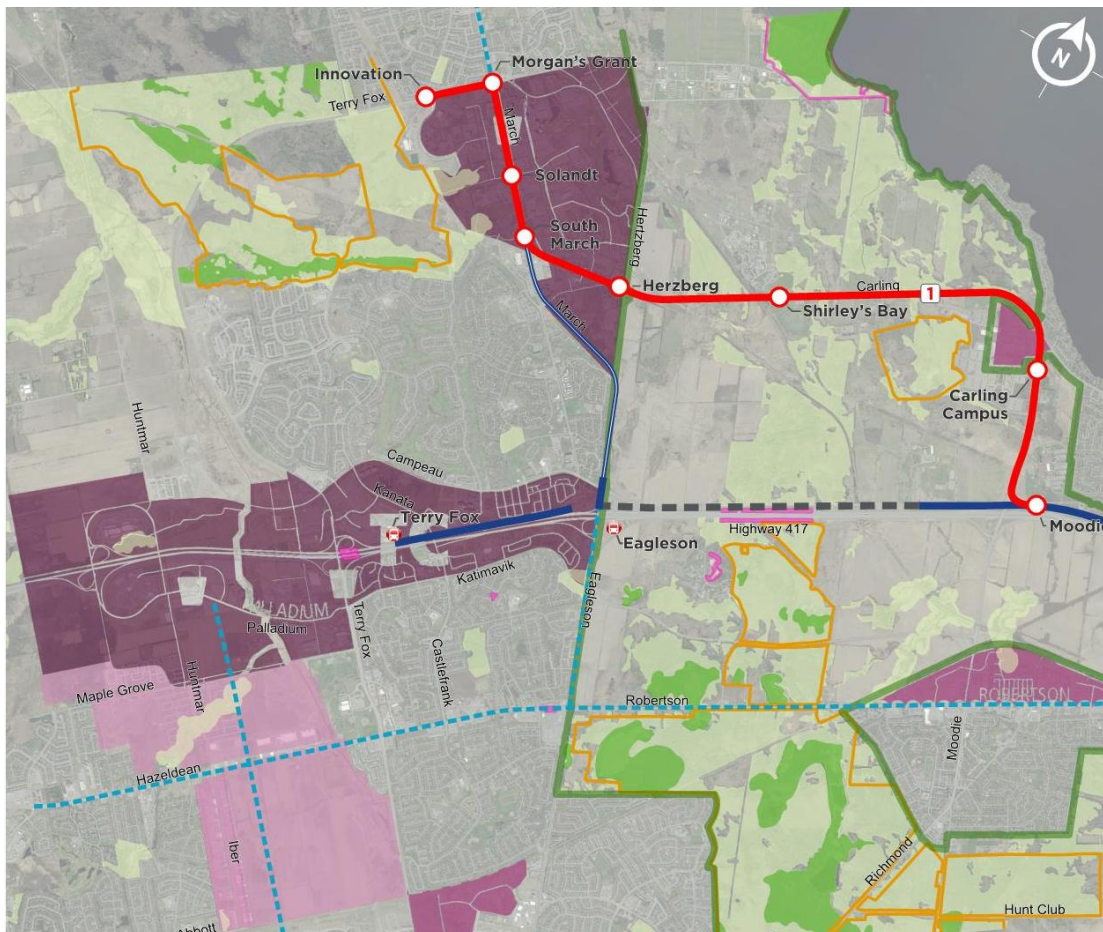


Figure 8: Kanata LRT Corridor 1A Alternative

A comparative evaluation was undertaken between Corridor 1A and the preferred Corridor 8A using the same criteria consistent with the second round of evaluation. It should be noted that at DND's request, their growth projections were applied to the ridership analysis, which are well over and above the City's Official Plan growth projections.

Based on DND's growth projection assumptions, Corridor 1A ridership (Figure 9) predicts that over 50% of Kanata transit riders prefer to travel along Highway 417 by bus, splitting the riders almost equally between LRT and BRT. As shown on Figure 9, 5,581 are travelling by bus versus 4,595 on LRT. This indicates that the dominant flow of travel continues to be by bus along Highway 417 and are not benefitting from the higher order LRT investment.

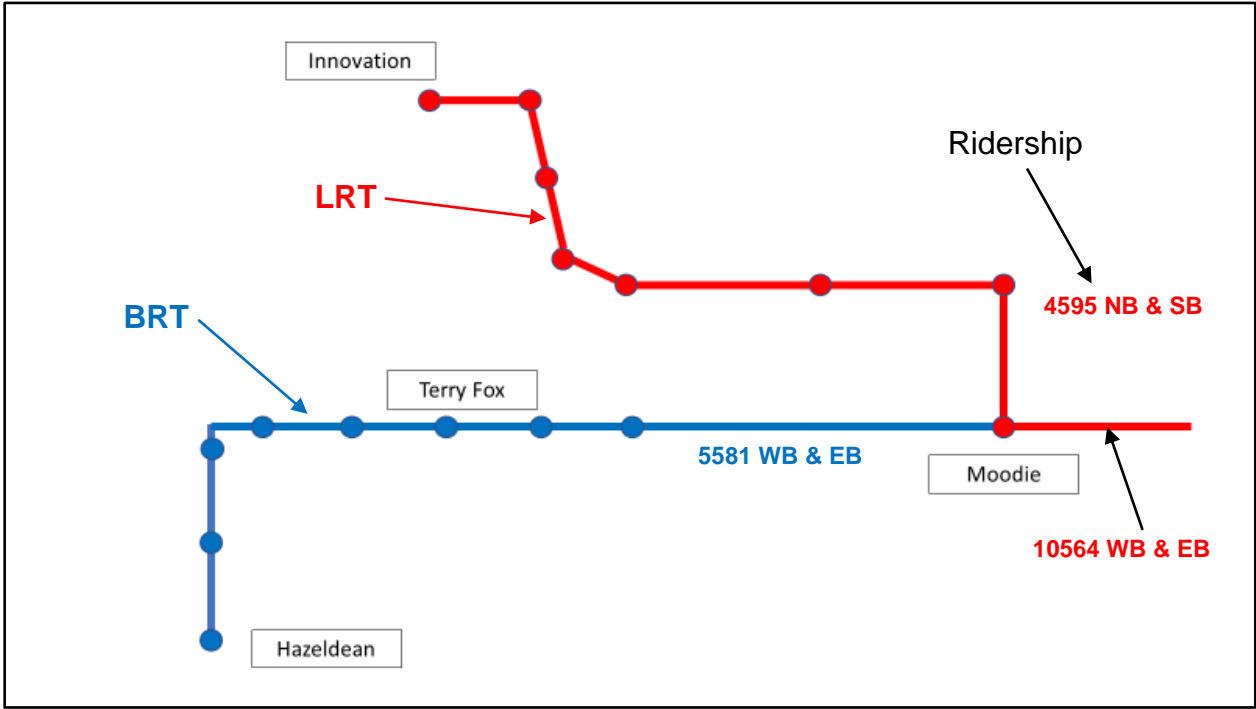


Figure 9: Proposed Corridor 1A Transit Ridership

From a network connectivity perspective, Corridor 1A provides for less connectivity between transit routes, particularly within Kanata, resulting in lower transit mode shares for internal Kanata trips compared to the Corridor 8A scenario.

Proposed LRT Corridor 8B Analysis

According to a meeting held with MP Karen McCrimmon, she also expressed concern with an LRT corridor that does not directly serve KNBP and DND. To address her concerns, a new proposed LRT corridor 8B (Figure 10) was developed and reviewed for

ridership. This LRT corridor begins with a loop, detouring initially off Highway 417, heading north along Moodie Drive, then west along Carling Avenue fronting onto DND Carling Campus and Shirley's Bay site and continues to Herzberg Road to serve the south part of KNBP. The LRT then turns south following Herzberg Road and then March Road, before continuing west along Highway 417 to terminate at Hazeldean Road.

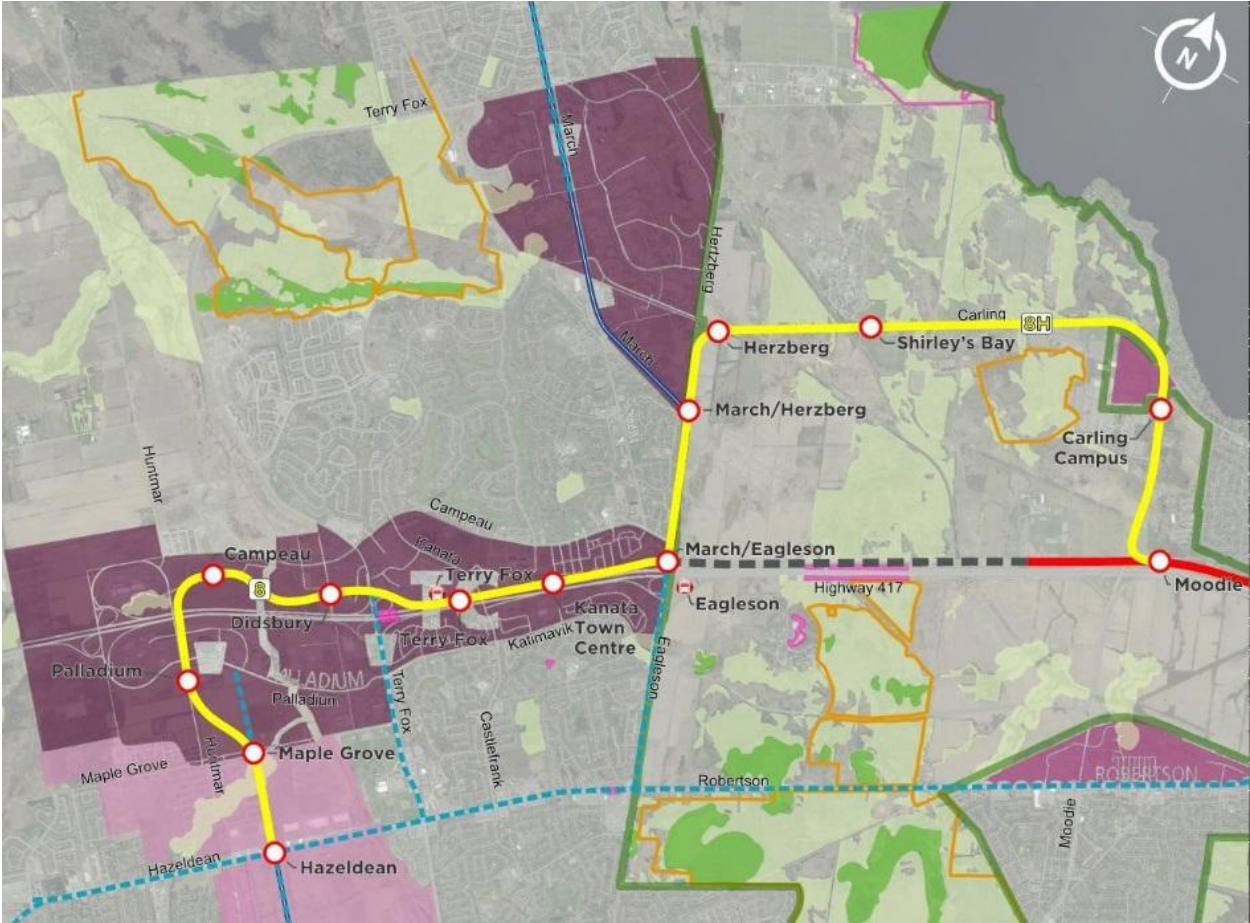


Figure 10: Proposed LRT Corridor 8B

For this corridor, the analysis concluded that despite the increased growth projections provided by DND over and above the City's Official Plan growth projections, this corridor also offered no additional benefit when compared to the recommended corridor. Ridership decreased, travel distance and time increased, and cost significantly increased for no added benefit. Moreover, an LRT station on Moodie Drive and Carling Avenue, fronting the site, would still require employees to walk as far as one kilometre to reach the furthest building. Table 7 provides a comparative summary of the two corridors.

The Carling Campus is better served by bus as it can run as frequently as one minute to reduce wait times, and it has the ability to penetrate into the DND site and reduce the walking distance. As for the KNBP, the BRT along March Road is identified in the City's Affordable Plan for implementation by 2031 and will provide high quality bus service into the area.

Table 7: Comparative Summary of Corridor 8A and 8B

<b>Qualitative Criteria</b>	<b>Recommended (8A)</b>	<b>Alternative (8B)</b>	<b>Differences 8B Compared to 8A</b>
LRT ridership (peak period)	10,611	9,370	1,241 or 12% fewer riders
# of Stations	9	13	4 additional stations
Distance	11 km	15 km	4 additional km
Travel Time	16 min	22.5 min	6.5 min additional travel time
Relative cost comparison (Order of magnitude)	1	~ 1.3	~ 30% cost increase for entire project
Service frequency to DND	1 min BRT frequency to Carling Campus from Moodie Station (2 min service to Shirley's Bay)	4.7 min LRT frequency	3.7 min reduced frequency
Walking distance to transit stop	Can provide BRT service into the DND site as security arrangements allow	~ 1 km walk to Moodie/Carling LRT station	Up to 1 km additional walking distance to LRT station



## Future Options to Serve KNBP and DND

While the recommended plan for the Kanata LRT will provide service for all of Kanata, there is benefit in providing efficient feeder service to the KNBP and DND sites. In the near term when LRT is extended to Moodie Station, transit can be provided to these sites with frequent bus service along Moodie Drive, Carling Avenue, and March Road. In the future, the feeder network would consider new technologies of that time such as fixed guideway systems and connected autonomous vehicles. Any technology option must be capable of aligning with future capacity and service requirements, which could be significant during peak demand.

The City has developed some corridor options (Figures 11 to 14) for consideration in the future but note that a separate environmental assessment is required to fully assess the options and develop a functional design. A brief description of the corridor options are summarized below.

The Moodie-Carling-March Option shown in Figure 11 would:

- Provide good connections for the DND facilities for people living east of the greenbelt
- Provide good service to the business park and Kanata North from both Moodie and March Stations
- Duplicate service in the northwest, which could reduce overall effectiveness of the service
- Service levels and terminal and connection points for the two services would need to be assessed and optimized

The Moodie-March Loop Option shown in Figure 12 would:

- Provide good connections to the DND sites for people who live either east or west of the Carling and Shirley's Bay facilities
- Not provide as strong a connection for the northern end of the business park or the residential areas north and west of the business park



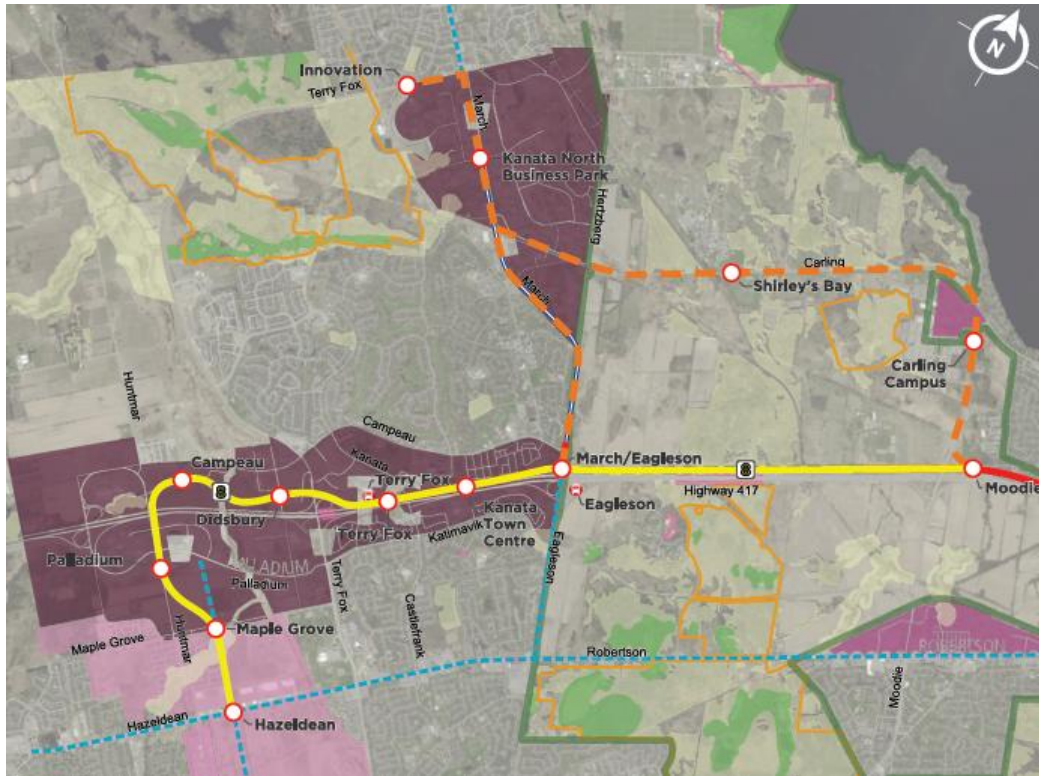


Figure 11: Corridor serves both DND and KNBP from 2 LRT Stations

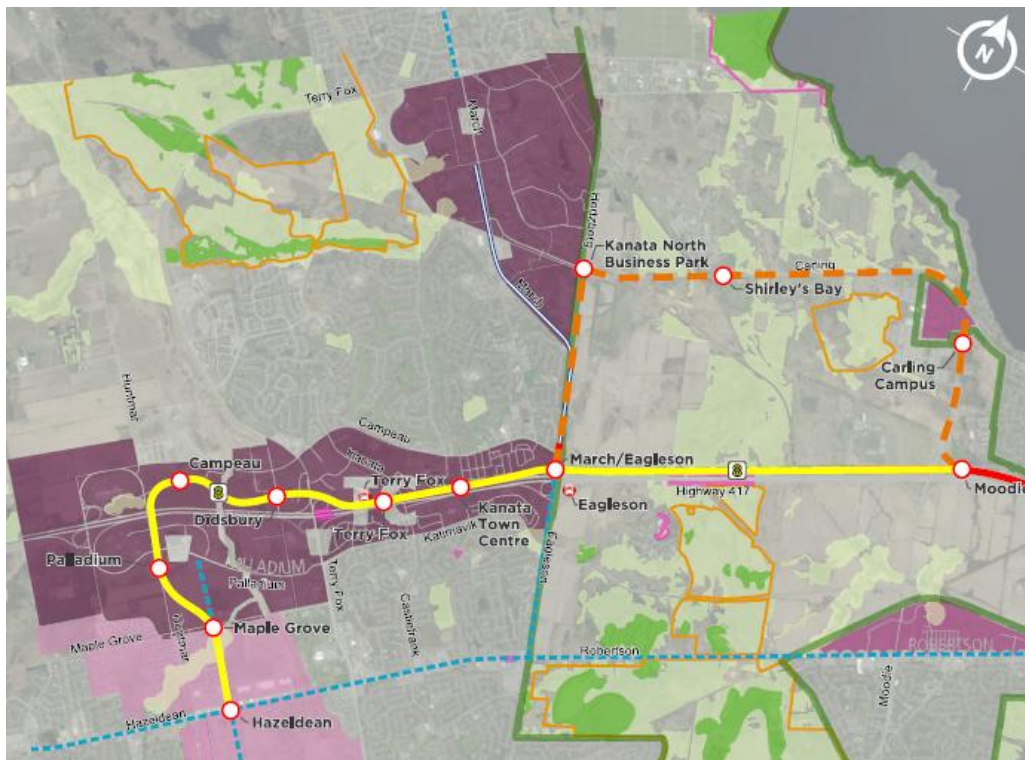


Figure 12: Loop corridor serves DND and south part of KNBP

The Moodie-Carling/March-Innovation Option shown in Figure 13 would:

- Provide good connections for the DND facilities for people living east of the greenbelt
- Provide good service to the business park and Kanata North from March-Eagleson Station only
- Not provide any connection between the Kanata North area and the DND facilities

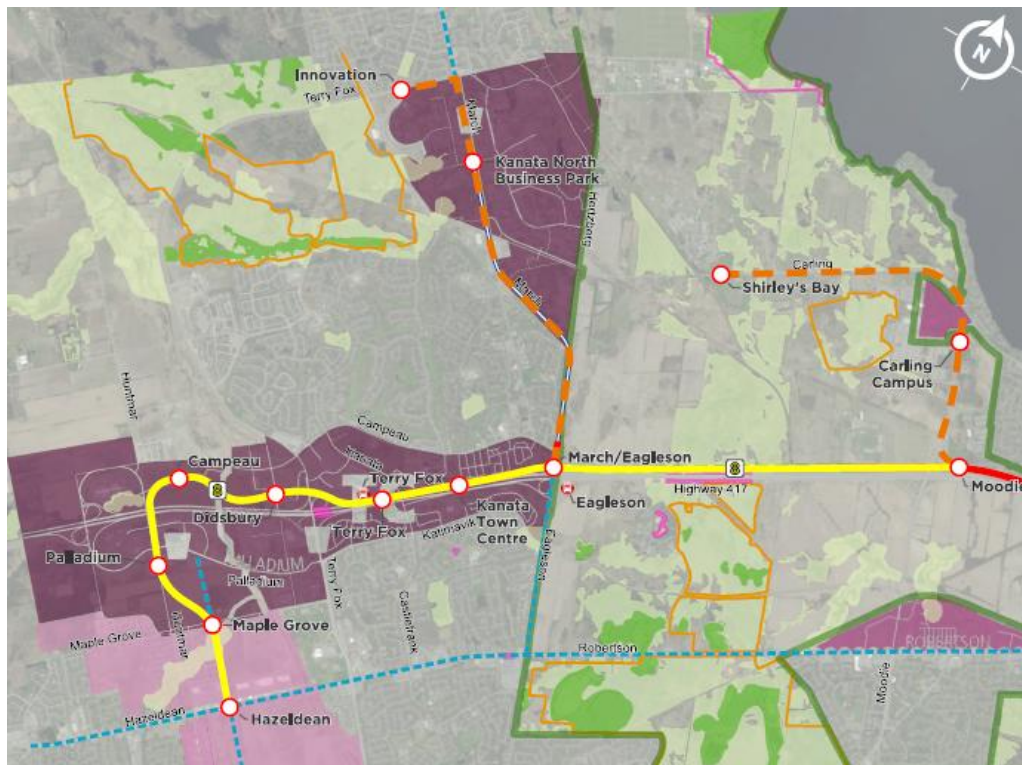


Figure 13: Independent corridors to serve each of DND and KNBP

The Moodie-Carling-Kanata North Option shown in Figure 14 would:

- Provide good connections for the DND facilities for people living east of the greenbelt
- Provide direct, but less attractive service for the business park and Kanata North residents as it does not provide a short and direct connection to the LRT at March-Eagleson



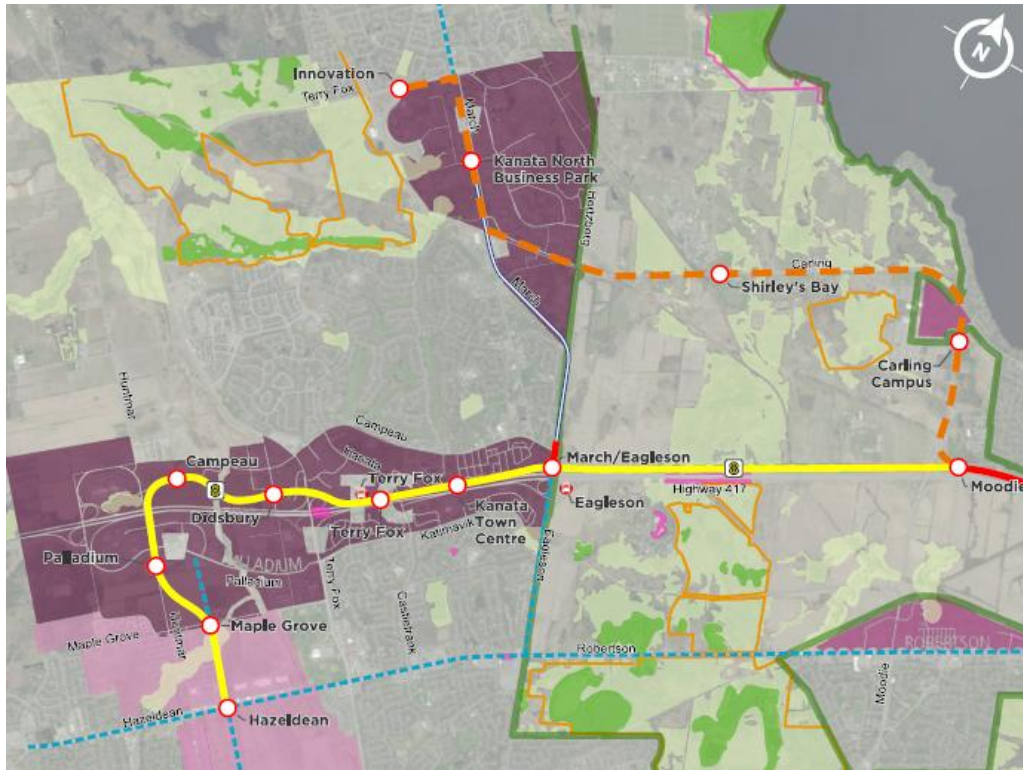


Figure 14: Corridor to serve both DND and KNBP from Moodie Station only

Some examples of technology systems are described below.

Fully Segregated Rail (Figure 15)

Development of a grade separated rail solution for a feeder network would primarily consider use of the same electric LRT technology for the Confederation Line, but with shorter (single car) trains to match capacity requirements and reduce station size and cost. Other rail-based rapid transit modes (e.g. Intermediate Capacity Transit System Skytrain) could also be considered. Grade separation would provide high capacity (likely more than needed) and reliable transit operations, but at substantial cost.



Figure15: Fully Segregated Rail (Ottawa's LRT)

#### At-Grade LRT (Figure 16)

At-grade LRT technology would make use of the same or similar light rail vehicles to those being used on the Confederation Line but running along roadway corridors (in dedicated lanes) and minimal grade separation, similar to the proposed Carling Avenue LRT identified in the City's 2031 Rapid Transit Network Concept. Sections of the Toronto streetcar network (Spadina, St. Clair Avenue) are comparable examples. Operationally, the feeder network would run separately from the Confederation Line with connections provided at Moodie and/or March Stations. An at-grade LRT system would provide medium to high capacity at reduced cost versus grade-separated rail options.



Figure 16: At Grade LRT (Toronto)

#### Fully Segregated BRT (Figure 17)

Development of a grade separated BRT solution for the feeder network would consider use of the same transitway technology Ottawa has used successfully for several decades. A dedicated busway with no or limited interaction with other modes would provide a higher capacity system upon which service can be tailored according to demand, with routes branching off at key points to serve destinations not directly on the main corridor, albeit at substantial cost in comparison to at-grade alternatives.

#### At-Grade BRT (Figure 18)

Development of an at-grade BRT solution for the feeder network would focus on an application similar to that recently constructed on Chapman Mills Drive, and currently planned for the Baseline and March Road corridors. This technology would use conventional buses operating primarily on dedicated lanes to connect to Moodie and/or March Station. An at-grade busway would provide a medium capacity system upon which service can operate according to demand, with routes branching off at key points to serve destinations not directly on the main corridor.





Figure 17: Fully Segregated BRT (Ottawa)





Figure 18: At Grade BRT (Ottawa)

#### Automated Guideway Technology (Figure 19)

Development of an Automated Guideway Technology (AGT) feeder network would consider an automated fixed guideway system operating trains or small “pods”. Examples include the existing “LINK” train at Toronto’s Pearson International Airport and “Podcar” system at Heathrow Airport in London, UK. AGT services can provide flexible service but at a lower total demand level. The guideway needs to be separated from other traffic. This type of system is most frequently used on a campus or airport site. An AGT system would provide limited capacity but has potential to provide increased service flexibility depending on the specific technology employed.



Figure 19: Automated Guideway Technology (Heathrow Airport's Podcar System)

Demand Responsive (Figure 20)

Development of a demand responsive feeder network would consider use of small shuttle buses or automated pods operating either on-street or a dedicated right-of-way. Vehicles would be dispatched as demand warrants and support door-to-door service between the LRT stations and destinations in the study area. While offering extreme flexibility, capacity is generally lower than fixed guideway transit and will not likely be able to support expected demand on segments of the feeder network (e.g. between DND Carling Campus and Moodie Station). On-street operation of demand responsive transit vehicles would be delayed by the same traffic congestion that the facility is meant to avoid, while development of dedicated infrastructure would increase costs to be comparable with other, higher capacity, technology options.



Figure 20: Demand Responsive (Ridehailing/Pod Shuttle Service)