

May 12, 2004

Ms. Mary-Frances Turner
Executive Co-ordinator
York Rapid Transit Plan
The Regional Municipality of York
17250 Yonge Street
Newmarket, ON L3Y 6Z1

RE: **HIGHWAY 7 RAPID TRANSIT ALIGNMENT (5.14)**

Dear Ms. Turner:

This will confirm that at the meeting of Council held on May 11, 2004, Clause 3 of Report No. 24, was approved as follows:

"That the report dated April 26, 2004 entitled "Highway 7 Rapid Transit Alignment" be received;

That the preferred alignment of the Highway 7 rapid transit project (Alternative C3 and C3-4 – Highway 7, Town Centre Boulevard, Civic Mall Corridor, Helen Avenue, Kennedy Road) as identified in Regional Report, dated September 8, 2003 (Attachment 1 and 2 to the original Council minutes kept on file in the Clerk's Department), be endorsed by Council;

And that crossing of Highway 404 be finalized in consultation with the Town of Markham and the Town of Richmond Hill;

And that staff continue to work with YRTP, the Region of York and area landowners to finalize details with respect to property implications, road cross-sections, station locations and streetscape;

And that staff report back on the details of the Environmental Assessment Study for endorsement and final conditions by Council once it is formally submitted for review to the Ministry of Environment, expected in Fall of 2004;

.....2/

Yours sincerely,

Sheila Birrell
Town Clerk

FILE No. - 909

q:\finance and administration\clerks\clerks exec\marylou\council - may 11-04.doc



REPORT TO Transportation Committee

TO: Mayor and Members of Council

FROM: Alan Brown, Director of Engineering

PREPARED BY: Arup Mukherjee, Manager of Transportation

DATE OF MEETING: 2004-Apr-26

SUBJECT: Highway 7 Rapid Transit Alignment

RECOMMENDATION:

That the report dated April 26, 2004 entitled "Highway 7 Rapid Transit Alignment" be received;

That the preferred alignment of the Highway 7 rapid transit project (Alternative C3 and C3-4—Hwy 7, Town Centre Blvd, Civic Mall Corridor, Helen Avenue, Kennedy Road) as identified in Regional Report, dated September 8, 2003 (**Attachment 1 and 2**), be endorsed by Council;

And that crossing of Hwy 404 be finalized in consultation with the Town of Markham and the Town of Richmond Hill

And that staff continue to work with YRTP, the Region of York and area landowners to finalize details with respect to property implications, road cross sections, station locations and streetscape;

And that staff report back on the details of the Environmental Assessment Study for endorsement and final conditions by Council once it is formally submitted for review to the Ministry of Environment, expected in Fall of 2004;

And that Mary-Frances Turner, Executive Co-ordinator of YRTP and Kees Schipper, Commissioner of Transportation and Works for the Region of York be advised of Council's decision.

PURPOSE:

This report seeks the preliminary endorsement of Council regarding the preferred alignment of the Highway 7 Rapid Transit project in Markham. Staff will report back on the final EA study expected in Fall, 2004. The Quick Start Programme is a short term programme to improve transit service on the Yonge Street, Hwy 7 and Warden Avenue corridor and is the subject of a separate report.

BACKGROUND:

In June 2002, the Region of York formed a public private partnership to plan, design and build the rapid transit plan as identified in the Region's Transportation Master Plan. One of the first priorities of the partnership is to complete the Environmental Assessments for each of the four transit corridors along Yonge Street, Highway 7, Vaughan North-South link and the Markham North-South link. The EA study for the Highway 7 corridor has progressed to the point of identifying a preferred alignment for the transit way.

During the course of the EA study, Town and YRTP staff have updated Council at key stages. Presentations and updates have been provided at the following Transportation Committee meetings:

- May 27, 2002
- Sep 30, 2002
- Oct 28, 2002
- Nov 25, 2002
- Mar 24, 2003
- Apr 28, 2003
- May 20, 2003
- Sep 29, 2003
- Jan 26, 2004
- Mar 29, 2004

At the Sep 29, 2003 Transportation Committee meeting, staff presented a report on the Network Configuration Study, which outlined the proposed development and phasing of the rapid transit system including routes and technologies (i.e. bus, light rail and subway). Council endorsed this report subject to further consideration of light rail technology east of Unionville based upon the results of the Highway 7 Corridor Study which is still ongoing.

The Quick Start Programme for Hwy 7 is a separate short term programme to improve transit until the full rapid transit system is in place.

OPTIONS/DISCUSSION:**Alternatives for the Highway 7 alignment have been assessed**

Based on a review of key parameters (land use, physical constraints, costs) it was determined that an alignment that generally stays along Highway 7 would best serve the needs in Markham except for the section between Woodbine Avenue and Kennedy Road. In this section, three primary options were considered for more detailed evaluation in relation to Markham Centre. These options are illustrated on **Attachment 1** and are identified as follows:

- Alternative C1 – Entirely on Hwy 7 between Woodbine Ave. and Kennedy Rd.
- Alternative C2 – A southern route following Woodbine Ave, Yorktech Dr to Enterprise Drive and Kennedy Rd. to Hwy. 7
- Alternative C3 – A route partially on Hwy 7 from Woodbine Ave., to S. Town Centre Blvd., then south to Enterprise Drive and east to Kennedy Road and north to Hwy 7

These options were evaluated based on the following goals and objectives of the rapid transit network:

- Improve Mobility
- Protect and Enhance Social Environment

- Protect Natural Environment
- Promote Smart Growth/Economic Development
- Maximize cost-effectiveness of rapid transit

Attachment 1 also outlines a detailed assessment of these alternatives in meeting these goals and objectives.

Based on this assessment, Alternative C3 was selected by YRTP, in consultation with the Town and other Stakeholders as the preferred primary route for the following reasons:

- It provides direct service to, and through, the planned Markham Centre from both east and west, including a civic transit mall through the Remington Downtown plan.
- It provides the best linkage of the existing Markham Civic Centre facilities to the major mixed-use Markham Centre development.
- A good connection to GO Transit's Stouffville Rail service and a future 407 BRT service can be achieved at Unionville GO Station.
- Proposed station locations will offer convenient access to both existing and future mixed-use development along most of the route.
- It offers the greatest potential for urban design improvements in the Highway 7 corridor and Markham Centre through a combination of arterial road and civic mall rights-of-way.
- Although not as minimal as a Highway 7 only route, effects on the natural environment are confined to a single new crossing of a Rouge River tributary.
- Capital costs are estimated to be similar to the other alternatives and land acquisition costs are limited to approx. 0.6 km of the route.
- Traffic interface concerns on the Highway 7 and Kennedy sections can be mitigated and attenuation of noise and vibration on the civic mall is feasible if required.

The crossing of Hwy 404 poses a significant technical and financial issue to address. Richmond Hill and Markham are pursuing the option with the Region of diverting the transit corridor north of Hwy 7 in a separate crossing or combined with a road crossing.

Secondary Alignment Options

Having selected C3 as the primary route, a second stage analysis of the local alignment options to transition from Hwy 7 near the Civic Centre to Markham Centre was carried out. These comprised alignments C3-1 to C3-5, shown in **Attachment 2** and identified as follows:

- C3-1 – Hwy 7 and Warden Avenue East Side to Civic Mall
- C3-2 – Hwy 7 and Warden Avenue West Side to Civic Mall
- C3-3 – Hwy 7 and Warden Avenue median to Civic Mall
- C3-4 – South Town Centre Blvd and new link to Civic Mall
- C3-5 – Hwy 7 and Birchmount Road to Civic Mall

These local options were assessed based on goals and objectives of the rapid transit network noted earlier and the details of this assessment are shown in **Attachment 2**. Variation C3-4 was determined to be the preferred alternative based on the following:

- Provides the greatest potential for ridership
- The station on Town Centre Blvd will provide convenient walk-in access to several commercial and residential uses in the area
- Allows for the best integration with the Markham N-S line
- It is one of the most cost-effective options
- Provides convenient access for the largest employer in the area (IBM)
- Alignment does not impact the Cedarland Woodlot and effects of new Rouge crossing at IBM property can be mitigated in consultation with IBM

A copy of the Region's September 18, 2003 report on the Hwy 7 corridor recommended alignment is attached (**Attachment 3**) for reference.

Local implications on preferred primary route alternative and secondary alignment

The preferred alignment of the transit way complements and enhances the Markham Centre plan. A strong transit corridor is one of the vital elements of a successful smart growth plan. Diverting the transit way from Highway 7 through the core area of downtown is a key factor in achieving the 30% mode split target. Station locations have been identified to maximize the catchment area for residential and commercial land uses. Hence the alignment along S. Town Centre Blvd. is supported by staff due to the presence of major development areas including Stringbridge, Liberty, Hilton Suites and IBM. East of Warden Avenue, the civic mall corridor was selected as the preferred route through the core retail/commercial area of the Remington Downtown plan. The integration of rapid transit along this linear facility will enhance the activity in this corridor and reduce the impact along Enterprise Drive. Finally, connection of the transit way to the Unionville GO station was also identified as an important element of the alignment. The Unionville GO station will become a transit hub that includes rapid transit, local transit, GO rail and the future Highway 407 bus way. In recognition of this key intermodal location, the Region of York has committed approximately \$600,000 to provide for an additional span for the Enterprise Drive/CN Rail underpass specifically for transit. Over time, as mode splits increase, the surface parking lots in this area are envisioned to be replaced by parking structures thereby freeing up more land for transit-oriented development.

The S. Town Centre alignment for the transit way will have an impact on property and adjacent development. Staff have worked with YRTP to review the traffic operational needs along this roadway and have met with the developers in this area. The required widening of Town Centre Blvd. has been identified and will be protected for rapid transit as part of the development agreement with the Liberty and Stringbridge development approvals.

Environmental Assessment Study

The EA studies continue to evaluate the technical details associated with various design and alignment options. It is expected that the final EA document will be submitted to the Ministry of Environment this Fall. Staff will continue to work closely with YRTP staff, Regional staff and

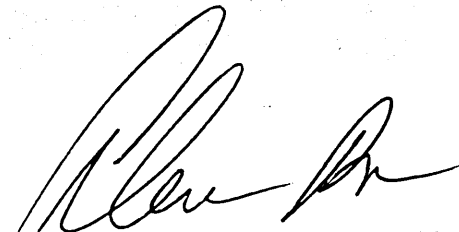
area landowners in evaluating various alignments and the design implications. The evaluation includes detailed review of right-of-way implications, streetscaping, transit stops, road cross sections, intersection operations, pedestrian access, parking, built form. Staff will continue to evaluate these issues in consultation with YRTP, the Region, and other stakeholders and report back with conditions for the final EA study in the Fall.

FINANCIAL CONSIDERATIONS:

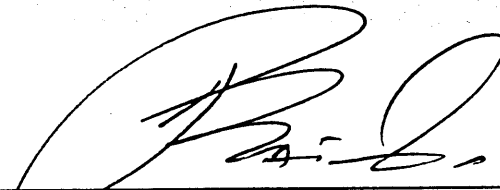
There are no financial implications to the Town as a result of the preferred alignment.

ATTACHMENTS:

- Attachment 1 – Primary Alignment Options and Evaluation of Primary Alignment Options
- Attachment 2 – Secondary Alignment Options and Evaluation of Secondary Alignment Options
- Attachment 3 – Regional Report on Alignments



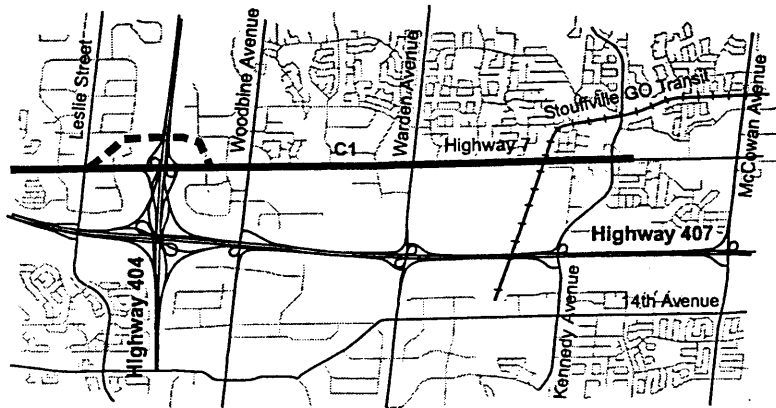
Alan Brown, C.E.T.
Director of Engineering



Jim Baird, M.C.I.P., R.P.P.
Commissioner of Development Services

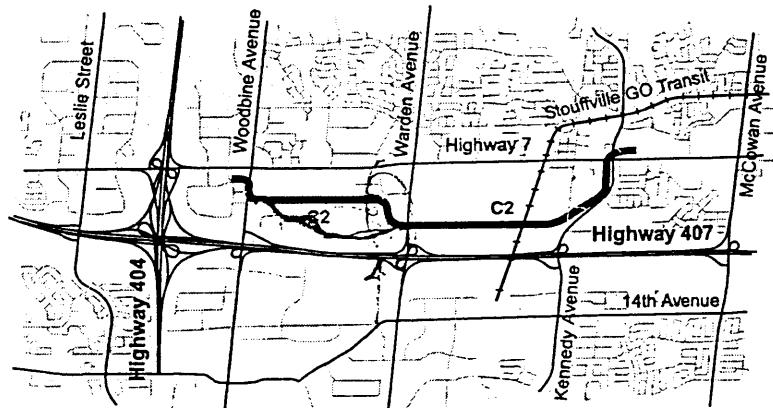
Alternative C1

Hwy 7 between Woodbine Ave. and Kennedy Rd.



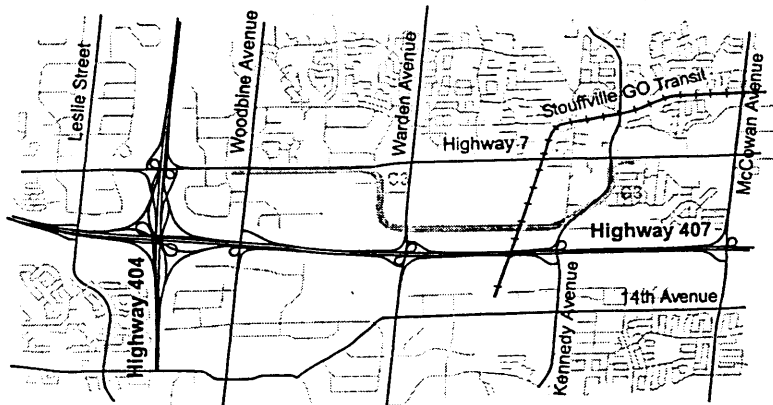
Alternative C2

Woodbine Ave., Yorktech Dr. to Markham Centre & Kennedy Rd. to Hwy 7



Alternative C3

Hwy 7 from Woodbine Ave. to S. Town Centre, Enterprise Dr. & Kennedy Rd. to Hwy.7



SYNOPSIS OF ALIGNMENT EVALUATION FINDINGS SEGMENT C (MARKHAM)

Objectives And Goals	Alternative C1: Hwy 7 between Woodbine Ave. and Kennedy Rd.	Alternative C2: Woodbine Ave., Yorktech Dr. to Markham Centre & Kennedy Rd. to Hwy 7	Alternative C3: Hwy 7 from Woodbine Ave. to S. Town Centre Blvd. to Markham Centre & Kennedy Rd. to Hwy 7
Improve Mobility • Inter-regional transit connectivity • System expansion flexibility • Speed, safety, ride comfort • Service quality and effectiveness • Station catchment • Convenience of access	• Indirect service to future Markham Centre reduces daily boardings by 4-5% • Has no direct connection to Stouffville GO service • Good alignment geometry but Hwy 7 traffic activity could affect reliability • Convenient access from residential use north of and mixed-use on Hwy 7	• Provides direct service to future Markham Centre and direct connection to GO Stouffville rail service • Fair alignment geometry on partially exclusive ROW but still requires several at-grade intersections • Station catchment is mainly employment and Markham Centre mixed-use	• Provides direct service to future Markham Centre and direct connection to GO Stouffville rail service • Fair-good alignment geometry requiring several intersections and partial interface with Hwy 7 traffic activity • Convenient access to mixed- uses along most of route
Protect & Enhance Social Environment Effects on communities • Road traffic and pedestrian circulation • Public safety and security • Noise and vibration • Effects on cultural resources • Community vistas and street aesthetics	• Causes very few adverse community effects after construction • Hwy 7 median location has most traffic interface with greater safety risk • Alignment entirely in Hwy 7 minimizes effect of system noise and vibration and offers good urban design potential • Minimal effect on community vistas	• Some intrusion in river/ creek valleys but few other adverse community effects • No Hwy 7 traffic interface but route requires most intersections • Noise & vibration attenuation may be required in Markham Centre civic mall and river valleys. • Urban design potential mainly in Markham Centre and Kennedy Road.	• Minor intrusion in river valley and few other adverse community effects • Some Hwy 7 traffic interface and several intersections increases safety risk • Noise & vibration attenuation may be required in Markham Centre civic mall • Good urban design potential in Markham Centre, on Kennedy Road and Hwy 7, particularly at Civic Centre
Protect Natural Environment • Effect on aquatic ecosystems • Effect on terrestrial ecosystems • Effect on Air Quality • Effect on Hydro-geological conditions	• Has little adverse effect on aquatic & terrestrial ecosystems • Some potential for minor effect on air quality • Highest number of potentially hazardous material sites	• Potential for some effects on aquatic ecosystems due to the alignment requiring new crossings at Beaver Creek and Apple Creek • Least potential for adverse effect on air quality (fewer receptors) • Few potentially hazardous material sites	• Potential for some effects on aquatic ecosystems due to the alignment requiring bridge widening at Beaver Creek and Apple Creek • Minor potential for adverse air quality effects • Few potentially hazardous material sites
Promote Smart Growth / Economic Development • Regional/Mun. Plans and Urban Structure	• Conforms well with planning policies and provides acceptable access to community facilities, but by-passes Markham Centre	• Conforms with planning policies and supports urban structure of Region • Provides good access to community facilities	• Conforms best with planning policies and supports urban structure of Region • Provides very good access to community facilities

Access to community facilities • Effect on business activities • Goods movement • Promote transit-oriented development	Markham Centre • Provides good potential for increase in existing business activities along Hwy 7 • Provides opportunities for higher order uses	• Serves Markham Centre well, Civic Centre less convenient • Provides some potential for increase in existing business activities (Kennedy, Woodbine) • Provides good opportunities for TODs / higher order use	to community facilities • Serves both Civic Centre and Markham Centre well • Provides good potential for increase in existing business activities (Hwy 7, Kennedy) • Provides good opportunities for TODs / higher order use
Maximize Cost-effectiveness of rapid transit • Effect on Capital Costs • Property required Effect on operating and maintenance costs	• Capital cost +/- \$147 million • Minor property cost • Lowest vehicle and O&M costs due to alignment being shortest.	• Capital cost +/- \$154 million • Property cost for 2.5km ROW • Vehicle and O&M costs marginally higher due to longer alignment	• Capital cost +/- \$156 million • Property cost for 0.6 km ROW • Vehicle and O&M costs marginally higher due to longer alignment.

C3 Transition from Hwy 7 to Enterprise Alignment Options Evaluated

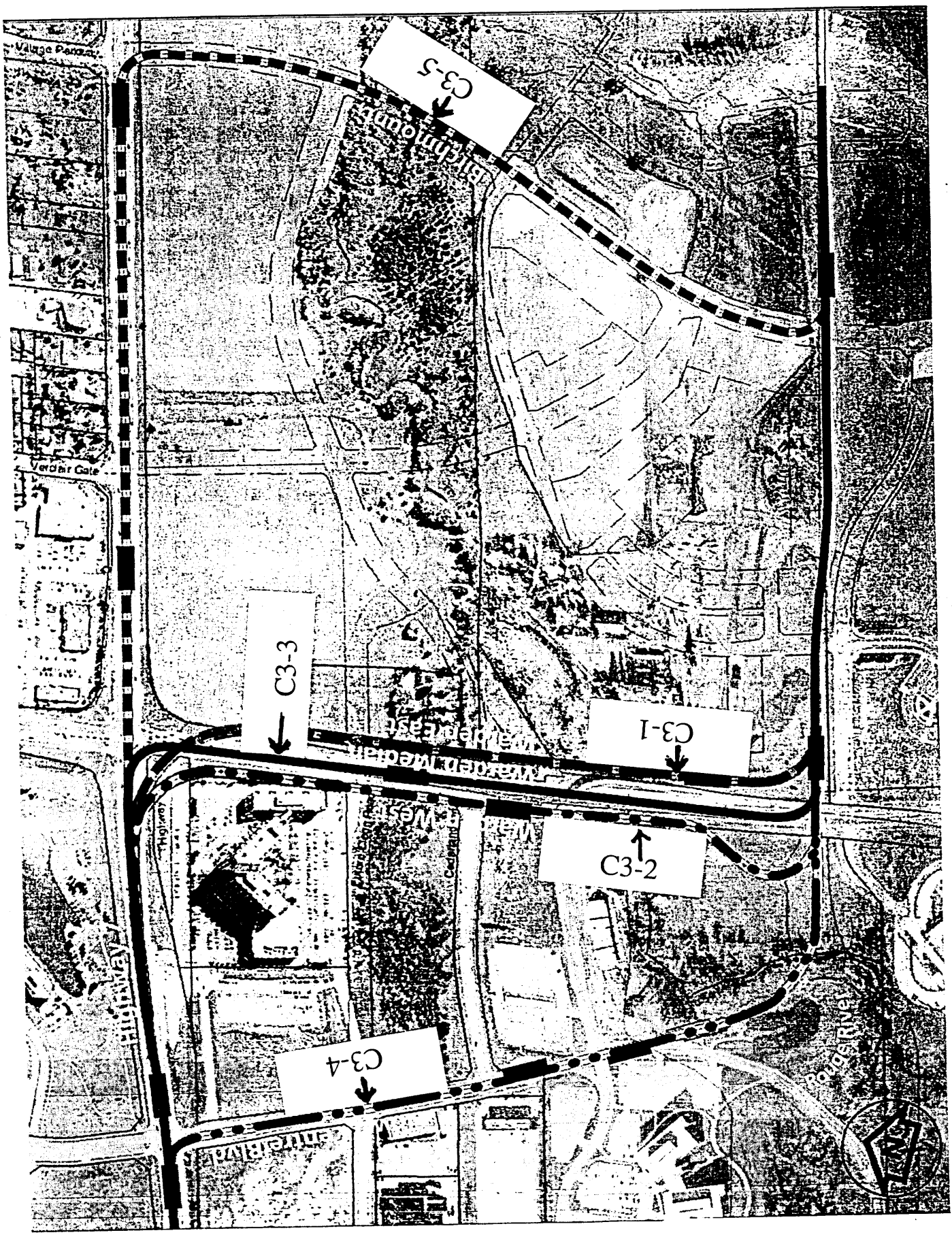


TABLE 2 : EVALUATION OF ALIGNMENT OPTIONS FOR TRAIL TION FROM HWY 7 TO MARKHAM CENTRE

OBJECTIVES AND GOALS	WARDEN: EAST SIDE GRADE SEPARATION	WARDEN: WEST SIDE GRADE SEPARATION	WARDEN: MEDIAN AT GRADE	TOWN CENTRE BLVD. ALIGNMENT	BIRCHMOUNT ALIGNMENT
Improve Mobility Station Catchment & Ridership Potential	Alignment geometry (hor. & vert.) permits two stations: TCB/7 and on Warden south of Rouge crossing; 1,100 units/91,500 m ² employment (200m rad.)	Alignment geometry (hor. & vert.) permits three stations: TCB/7, south of Cedarland Dr. and Enterprise/Warden; 2,030 units/105,200 m ² employment (200m rad.)	Alignment geometry (hor. & vert.) permits three stations: TCB/7, south of Cedarland Dr. and Enterprise/Warden; 2,030 units/105,200 m ² employment (200m rad.)	Alignment geometry (hor. & vert.) permits three stations: TCB/7, IBM/TCB & Enterprise/Warden; 1,840 units/127,400 m ² employment (200m rad.)	Alignment geometry (hor. & vert.) permits three stations: TCB/7, Verclair/7, Village/7 and Village/7; 2,610 units/106,700 m ² employment (200m rad.)
Influence on service speed, safety and ride comfort	2 horizontal curvatures to maneuver with; Longer route (1,800 m) than TCB alignment but higher speed possible with grade separation at Warden/Hwy 7.	4 horizontal curvatures to maneuver with; Longer route (1,900 m) than TCB alignment and curve separation at Warden/Hwy 7.	2 horizontal curvatures to maneuver with; Longer route (1,800 m) than TCB alignment with service speed constrained by at-grade traffic intersections	2 horizontal curvatures to maneuver with; Shorter route (1,500 m) but service speed constrained by at-grade traffic intersections	4 horizontal curvatures to maneuver with; Longest route (2,200 m) with speed constrained due to curvature and residential street environment
Effect on transit service quality and reliability	Delay potential at two intersections (TCB/7 & Clegg/Warden) with one unconventional int.; Hwy 7 median access grade separated.	Delay potential at five intersections (TCB/7, Clegg/Warden, Cedarland/Warden, IBM/Warden & Enterprise/Warden) with four unconventional intersections; Hwy 7 median access grade separated.	Delay potential at four intersections (TCB/7, Warden/7, Clegg/Warden & Enterprise/Warden) with two unconventional intersections; Hwy 7 median access at-grade.	Delay potential at five intersections (TCB/7, Clegg/TCB, Cedarland/TCB, IBM/TCB & Enterprise/Warden) with two unconventional int.; Hwy 7 median access at-grade.	Delay potential at seven intersections (TCB/7, Warden/7, Verclair/7, Village/7, future int. on Birchmount & Birchmount/transitway in Markham Centre) with two unconventional int.; Hwy 7 median access at-grade.
Interface with service on Markham North-South Link	MNSL service to IBM requires more time consuming loop on Cedarland and bus only crossing of Warden.	MNSL service to IBM requires more time consuming loop on Cedarland.	MNSL service to IBM requires more time consuming loop on Cedarland and mixed traffic weaving on Warden.	MNSL service can access IBM station through convenient loop on Hwy 7 transitway. Transfer to Hwy 7 service at IBM station.	MNSL service to IBM requires the most time consuming loop on Cedarland. Transfer to Hwy 7 service at Birchmount / Markham Centre station.
Protect and Enhance Social Environment	Underpass ramp on east side of Warden has negative effect on urban design and streetscapes opportunities on hotel frontage and park zone. Widening of Rouge crossing will require re-vegetation.	Underpass ramp on west side of Warden has negative effect on urban design and streetscapes opportunities on hotel frontage and park zone. Widening of Rouge crossing will require re-vegetation.	Widening of Warden ROW limits median streetscapes; some streetscapes opportunity along Hwy 7 & in park zone. Widening of Rouge crossing will require re-vegetation.	Constrained Town Centre Blvd. ROW limits median streetscapes to minor island planning. New Rouge crossing will require re-vegetation.	Some streetscapes opportunities on Hwy 7 but transitway and left turn lanes in narrow Birchmount ROW limit options
Road traffic access and pedestrian circulation	No restriction on intersection movements. One unconventional int. at Clegg/Warden. Limits access from Warden to east side properties. Reduced opportunities for walk-in access to stations.	No restriction on intersection movements. Four unconventional int. at Clegg/Warden, Cedarland/Warden, IBM/Warden & Enterprise/Warden. Limits access from Warden to west side properties. Reasonable opportunity for walk-in access to stations.	No restriction on intersection movements. Two unconventional int. at Warden/7 & Enterprise/Warden. Access to adjacent properties unchanged from constraints imposed by Warden and Hwy 7 raised medians. Reasonable opportunity for walk-in access to stations.	No restriction on intersection movements. Three unconventional int. at TCB/7, IBM/TCB & Enterprise/Warden. Requires left & U-turns at intersections to access properties along Town Centre Blvd. Good walk-in access to all stations.	Some restriction on future movements on Birchmount intersection. Two unconventional int. at Village/7 & Birchmount/transitway in Markham Centre. Requires left & U-turns at intersections to access properties along Birchmount and Hwy 7.
Community and pedestrian safety and security	Interfaces with pedestrian crossings at 2 intersections. Some inconvenience in accessing Enterprise/ Warden station from west.	Interfaces with pedestrian crossings at 5 intersections. Inconvenience in accessing Enterprise/ Warden station from west.	Interfaces with pedestrian crossings at 4 intersections. Inconvenience in accessing Enterprise/ Warden station from west.	Interfaces with pedestrian crossings at 5 intersections. Most convenience in accessing IBM/TCB station from west.	Reasonable walk-in access to all stations. Interfaces with pedestrian crossings at 7 intersections. Most in convenience in accessing station from west.
Potential for adverse Noise & Vibration Effects	Very low due to operation near major arterial.	Very low due to operation near major arterial.	Very low due to operation near major arterial.	Low due to operation in collector road with mixed use zoning	Low due to operation in major arterial and collector road but residential zoning sensitivity on Birchmount
Protect Natural Environment	One new Rouge crossing adjacent to existing Warden Avenue crossing	One new Rouge crossing adjacent to existing Warden Avenue crossing	One new Rouge crossing by widening existing Warden Avenue crossing	One Rouge crossing at new location southeast of IBM	One Rouge crossing at future Birchmount crossing
Effect on aquatic ecosystems (watercourses)	Larger area of Rouge Valley than TCB alignment	Rouge Valley and Cedarland woodlot	Rouge Valley and Cedarland woodlot	Rouge Valley only	Larger area on Rouge Valley at Birchmount than TCB alignment
Effect on terrestrial ecosystems (Vegetation)	Two stations attracting transit-oriented development, one constrained by valley lands	Three stations attracting transit-oriented development; alignment displaces development parcel on Warden south of Rouge River	Three stations attracting transit-oriented development	Three stations attracting transit - oriented development	Three stations attracting transit - oriented development
Promote Smart Growth/Economic Development	Constrains development on northeast quadrant of Warden/Enterprise and affects Warden's east side retail frontage north of Rouge.	Warden west side frontage displaced S. of Rouge	Minor constraint on commercial development at Warden/Enterprise NE corner. Median Station on Warden will require new pedestrian signal	Left turn access to businesses restricted to signalized intersections on Hwy 7 between Town Centre and Birchmount	Left turn access to businesses restricted to signalized intersections on Hwy 7 between Town Centre and Birchmount
Influence on Urban Form and TOD	Construction costs highest due to Hwy 7/Warden grade separation and new Rouge bridge. Grade separation increases O&M costs	Construction costs highest due to Hwy 7/Warden grade separation and new Rouge bridge. Grade separation increases O&M costs	Construction costs highest due to Hwy 7/Warden grade separation and new Rouge bridge. Grade separation increases O&M costs	Moderate construction cost, mainly roadworks and new Rouge bridge. O&M costs normal for at-grade transitway	High construction cost, mainly new roadworks and new Rouge bridge. O&M costs normal for at-grade transitway
Effect on business activities and goods movement	Approx. 810 m of new transit ROW on east side of Warden.	Approx. 860 m of new transit ROW on west side of Warden, IBM's valleyland.	Approx. 810 m of Warden ROW widening mainly on west side.	Approx. 940 m of TCB ROW widening, Rouge river valley land.	Widening of Birchmount & Hwy 7 ROW for new transit lanes, approx. 1,150 m in length.
Maximize Cost-effectiveness of Rapid Transit					
Effect on Capital and operating & maintenance costs					
Property required					

Note: Distances considered from TCB to Birchmount/ Markham Centre

C:\Documents and Settings\BTL\Local Settings\Temporary Internet Files\OLK6\Markham Comm Rep Hwy 7 Table 2 Secondary Align Options_1_1.doc
March 09, 2004