REGION OF OTTAWA-CARLETON REPORT
RÉGION D'OTTAWA-CARLETON RAPPORT

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Your File/V/Réf.

DATE 4 May 1999

TO/DEST. Co-ordinator Transportation Committee

FROM/EXP. Planning and Development Approvals Commissioner

SUBJECT/OBJET **ENVIRONMENTAL ASSESSMENT (EA) STUDY LIGHT RAIL PILOT PROJECT**

DEPARTMENTAL RECOMMENDATIONS

That the Transportation Committee recommend Council approve:

1. **The recommendations of the EA Study regarding infrastructure requirements and mitigation plans for light rail operation in the CP Rail corridor;**

2. **The preparation and submission of the EA Report for approval, in compliance with the Provincial EA Act, and the Federal EA Act (CEAA).**

BACKGROUND

Regional Council approved the CPR (Greenboro to Bayview) corridor as the preferred route for a light rail pilot project (LRPP) on 9 September 1998. One of the tasks of examining the feasibility of introducing light rail transit is to assess its environmental impacts. This assessment is mandatory, as stipulated in the Provincial Environmental Assessment Act. As this is a transit project, an Individual EA process must be followed. Since the rail corridor impacts on Federal lands, Federal EA requirements must be addressed also.

As a requirement of the EA Act, a Terms of Reference (ToR) was prepared for Ministry of Environment approval. The ToR was developed with input from the public and government agencies, and was accepted and approved by Council on 9 September 1998. It is a document which defines the study scope for the environmental assessment, including public consultation. The EA Study has now been completed based on the framework outlined in the ToR.

If the Pilot Project is delayed or not approved by Council, the EA Study is still a valid and necessary exercise to allow Council's Official Plan policy to be implemented at some time in the future.

DISCUSSION

EA Approach

Figure 1 identifies the CP rail corridor and the station sites.

The environmental assessment examined the impacts of the five pilot station locations (Greenboro, Confederation Heights, Carleton University, Carling, and Bayview) as well as three other station locations should an expansion of the system be desired. The three additional stations would be at South Keys, Walkley, and Gladstone. For the pilot project, a siding is proposed approximately midway, at Carleton University.

The EA also investigated the operational impacts along the entire corridor, including the examination of potential locations for additional sidings. Noise, vibration, and emissions analyses were carried out for the 3-car vehicle, Bombardier's Talent BR 643, which is the vehicle combination being recommended by CP Rail.

With respect to the station locations, various "quadrants" were examined at each of the eight station sites. The analysis and evaluation then resulted in a preferred location for each site. The area of impact, or "station envelope", was of sufficient size to permit various station layout options to be considered at the detailed design stage. These envelopes also included primary connections to nearby transitway stations, where applicable, and/or to adjacent roads.

Evaluation

The analyses of the station envelopes were carried out based on the master list of evaluation criteria and indicators established during the ToR stage. The criteria indicator list was fine-tuned during the EA Study with input from the project's Technical Advisory and Public Advisory committees (TAC and PAC respectively).

The major evaluation criteria groups are: Natural Environment, Caring and Healthy Communities, Transportation, and Cost. Each group was then sub-divided into various indicators which were used to evaluate the station location options. A ranking of the criteria groups was also carried out by the Study Team, TAC, and PAC. With all committees, the Transportation criteria group ranked highest and the Natural Environment criteria group ranked the lowest. The PAC decided that Caring and Healthy Communities ranked second highest in importance, followed very closely by Cost; whereas the order was reverse for the TAC and Study Team rankings.

Issues, Impacts and Mitigation

Need:
The need for rail transit in this corridor was identified in the Official Plan and Transportation Master Plan, approved by Regional Council in 1997. The need for the pilot project was revisited and a cost effectiveness analysis was approved by Transportation Committee and Council in September 1998.

Station Design:
Although this Study was to address environmental assessment issues, many of the comments raised by the public related to detailed station design concerns such as security, walking distances, and accessibility - particularly at Bayview and Carleton stations. The station envelopes developed as part of the EA Study were sufficiently large to accommodate many combinations of detailed design solutions. All comments received pertaining to specific station design elements were forwarded to CP Rail's detailed design team. The EA Study is not a design study of the stations. The final design will be proposed by CP Rail.

Pathways:
City of Ottawa had requested that the Region make provision for a pathway along side the rail corridor as part of the Pilot Project. However, fulfilling this request at this time poses difficulties since the Region does not own the corridor. It would require the Region to expend funds to acquire lands. Given that this is a Pilot Project, it may not be appropriate to make such an investment at this time. However, it is recognised that if at a later date circumstances change (e.g. ownership, funding) and the LRPP becomes firmly established, the Region may then take the opportunity at that time (in conjunction with the City) to pursue protection for a linear pathway, if at all possible.

Crossing of Recreational Pathway at Brookfield:
Currently the recreational pathway crosses the tracks at-grade. The frequency of train conflicts will substantially increase with the implementation of the LRPP, thereby safety becomes an important issue. In order to maintain the use of this pathway, an at-grade "pedestrian maze" is proposed to help direct users to look both ways before crossing. The use of the maze, together with the existing crossing signals, will increase the level of access control and improve safety. The maze will be designed to permit passage of wheelchairs, and people walking with bicycles (including those with attached child-trailers). While a grade-separated crossing would allow unimpeded use of the recreational pathway (and is encouraged by the Regional Cycling Advisory Group), it is not financially feasible to construct such a facility as part of the Pilot Project and therefore grade-separation is not being recommended. Another crossing safe-guard option would be the installation of automatic gates which would have less of an impact on the operation of the pathway as compared to the maze option, but it would have greater financial and maintenance implications. The gate option has been forwarded to CP Rail for consideration as they are responsible for the final design proposal.

Rideau River Bridge Crossing:
There are two bridge crossings for the Pilot Project: Rideau River and Sawmill Creek. The Rideau River bridge modifications include repairs and rehabilitation to reinforce the steel structure and abutment at the south end of the bridge. There is also a potential for construction of a pedestrian walkway along one side of the bridge for emergency purposes only. The need to include the walkway is dependent on CP Rail's operation and safety plan, which will require Transport Canada approval. From an EA perspective, the modifications to the bridge will not involve activity in the water and construction best management practices will be observed, to avoid debris falling into the River. Construction access routes will use existing pathways and maintenance paths to ensure minimal disruption to natural features.

Sawmill Creek Structure Crossing:
The upgrades to the existing Sawmill Creek structure include the replacement of timber piles with steel piles. The new piles will be located along the banks of the Creek and no impact to the creek bed is anticipated. Best environmental management construction practices will be employed including the use of silt curtains as directed by the approval body, the Rideau Valley Conservation Authority. RVCA has also recommended that construction activities be limited between March 16 and June 30, during the fish spawning season.

Dows Lake Tunnel:
The tunnel will be upgraded to include an emergency pedestrian walkway, improvements to the existing lighting system, and minor internal structural repairs to stop leakage. The existing ventilation system was examined by CP Rail, and was determined to be adequate for LRPP operation. As all of these activities occur within the existing tunnel, no environmental impacts are anticipated.

Natural Environment:
An evaluation of the natural environment along the corridor was carried out as part of this Study. Since the Light Rail Pilot Project is using an existing operational rail line, the evaluation confirmed that no impacts are anticipated along the right-of-way. The station envelopes are located in areas with no significant impacts.

Contaminated Sites:
During construction, there is the potential to encounter contaminated materials at Bayview and Carleton due to the presence of former landfilled areas. The potential concerns relate to methane gas which is generated as a result of the decomposition of organic matter within the landfilled refuse. At Carling, adjacent former land uses have resulted in some contamination of metals, and inorganic and organic contaminants. Site investigation should be undertaken to quantify potential human health risks prior to construction and effects mitigated if required. No effects associated with contaminated sites are anticipated during the operation of the LRPP.

Vehicle Noise Emissions:
A thorough study was undertaken to assess the noise impacts of light rail operation. Noise impacts were assessed at 8 residential locations and 2 institutional receptors along the corridor. The analysis considered the absolute sound exposure from the Light Rail operations, the change in long term sound exposure over ambient level as a result of the Light Rail operations, and the absolute sound level associated with "pass-bys" of the light rail vehicle.

The noise analysis indicated that wayside mitigation in the form of noise barriers along the right-of-way may be required at three sections along the corridor:

- 2.3m to 3.0m high noise wall, east of the track near Traverse Drive (north from Walkley Road overpass to the tennis courts at the end of Traverse Drive);
- 2.0m high noise wall, east of the track between Adeline Street and Young Street; and
- 1.5m high noise wall, west of the track (north from Somerset Street to just past Wellington Street).

Alternatively, source noise mitigation in the form of vehicle noise treatments and mitigation is still being investigated by CP Rail and the vehicle manufacturer, Bombardier. The vehicles themselves are still being designed and have not yet been produced. It is quite possible that the actual vehicles, with modified noise skirts around the wheels and modified muffle panels around the engine in place, may emit a much lower level of noise than currently anticipated, thus making the noise walls unnecessary.

Therefore, it is proposed that a monitoring program be put in place at the start of operation of the LRPP, for a period of a few weeks. Actual noise readings will be recorded and assessed during that time. Afterwards, if it is deemed necessary, the noise walls will be designed and built immediately following the monitoring program. Design and construction of these walls will follow best management practices to minimise disruption to the surrounding environs.

Warning Devices:
Three types of warning devices are associated with the Light Rail operation which could have an impact on the adjacent surroundings. These are crossing bells, engine bells (as the train approaches a station, track diamonds, or at-grade crossings), and engine whistles. The Ministry of Environment does not support the mitigation of effects of warning devices in outdoor spaces as this reduces their effectiveness. No specific environmental noise approval guidelines exist for warning devices and impacts were assessed on the potential for sleep disturbance and speech interference. Noise effects are often evaluated in terms of percentage of population disturbed. Common environmental noise assessment guidelines have ranges of between 20 - 40% of the population disturbed.

Crossing bells exist today at the recreational pathway crossing near Brookfield Road. Although there will be an increase in the frequency of bell ringing due to the Light Rail operation, it has been determined that there will be no significant impact on sleep disturbances and speech interference at this location.

Engine bells are activated when trains enter or leave a station, approach railway track diamonds (between Walkley and Greenboro stations, and near Confederation Heights station), or approach at-grade crossings (at Brookfield recreational path). The noise analysis indicated that there will be no significant impact on sleep disturbances and speech interference at any of these locations.

Engine whistles are currently being sounded by trains on approach to the Rideau River Bridge. The receptors of concern are Carleton University student residences and lecture halls. In addition to sleep disturbances, and speech interference, the effects of train whistles are evaluated based on MOE land use planning guidelines for indoor sound exposures that assumed closed windows and

address the cumulative impact of operational noise and noise from engine whistles. These MOE guidelines are met at all receptors. However, if windows are opened in the evenings, increased noise levels can cause speech interference (vocal effort is raised above normal at 3m), and sleep disturbances of between 21 and 25%. At Carleton, there are no viable opportunities to mitigate with a noise wall, however CP Rail could apply to Transport Canada for an exemption to engine whistle blowing at approaches to the bridge provided that an alternative safety feature is in place (ie. fencing to restrict trespassing on the bridge crossing).

Vibration:
Potential vibration impacts were assessed at 12 receptors representing the worst case vibration impacts along the rail corridor. Vibration effects were assessed considering vehicle suspension and speed, upgraded track conditions and propagation effects associated with ground types, buildings, and floor levels (all receiver locations assume ground floor elevation). The analysis indicated that the LRPP is not anticipated to create vibration problems.

Air Quality:
The air quality assessment was based on worst-case assumptions. Pollutants assessed include carbon monoxide, nitrogen oxides, and particulate matter. The assessment indicated that MOE air quality guidelines are not exceeded for all pollutants with the exception of nitrogen oxide levels within 30m of an idling train. However, worst-case meteorological conditions are not expected to occur on a frequent basis, nor will they always be coincidental with elevated background concentrations. In addition, due to the limited length of time patrons of the LRPP would be exposed to idling trains, no adverse effects are predicted for those waiting on the platform at stations. Taking these facts into consideration, it is concluded that predicted concentrations of nitrogen oxide near the passenger platforms do not represent an unusual exposure, compared to typical pollutant exposures for pedestrians in urban areas.

The potential for odour impact was also examined. Odour, generally is a nuisance concern rather than a health concern, and hence odour sensitivity is quite subjective. Odour emission is also a function of the efficiency of the vehicle engine and type of fuel used. The more complete the combustion of hydrocarbons in the fuel, the less detectable the odour. Based on data for large diesel trucks and locomotives (since the proposed light rail vehicle BR 643 is not yet in production and data is unavailable), under the worst-case conditions, the range of detectable odours was predicted to be up to 200m when trains are idling at stations. The range of impact for trains travelling at normal speed along the rail line was predicted to be much less. As for mitigation, it may be that none is required, although an odour panel test could be conducted should there be a concern once the LRPP is in operation.

Visual Impact:
Upon examining the rail corridor, it was determined that only one area required visual impact mitigation. A privacy screen (fencing or landscaping) is required for those homes along Traverse Drive that back onto the rail corridor. This is the only residential stretch along the corridor where the tracks are at similar grade to the backyards of the properties. Elsewhere in other potentially visually-sensitive areas, the rail corridor is in a cut. At Traverse Drive, if a noise mitigation wall is installed, it will also serve as a visual screen with some potential additional landscaping required. If the noise mitigation wall is not needed, the commitment is still there to install the privacy screen.

Emergency Plan:
CP Rail has standard emergency and environmental plans in place for the operating of a railway. CP Rail will amend the existing plan to address the specifics of light rail operation. This amended plan will then be submitted for the approval of Transport Canada.

Land Requirements:
The land requirements for the Light Rail Pilot Project is primarily within the CP Rail corridor. Additional lands from adjacent properties belonging to Public Works, the NCC, City of Ottawa, and Carleton University may be required for stations and primary pathway connections that extend beyond the rail corridor.

Preferred Station Envelopes

The evaluation and public input resulted in station location preferences as shown in **Figures 2 and 2A.**

At South Keys, and at Greenboro, there is only one station envelope option at each site. The rail station will be on the east side of the tracks, and parallel to the transitway station, allowing for a direct connection between the two stations.

Walkley Station is situated south of Walkley Road, and west of the train tracks with connections to the transitway station via the stair and elevator towers along Walkley Road. The alternative location north of Walkley Road was deemed less desirable as it had a greater environmental impact on the residents of adjacent Traverse Drive.

Confederation Heights Station is recommended to be located in the southwest quadrant of Heron Road and the Airport Parkway, on the west side of the tracks. Pathways are proposed to connect the station to Heron Road and to Confederation Heights' pathway system. In comparison to the other location quadrants, this preferred site provides the best access to the transit market at this employment node. This location also minimises operational impacts on adjacent office building tenants.

At Carleton University, the station envelope is in the vicinity of the engineering and maintenance buildings (near Library and Campus roads). The station envelope allows for various pathway connection developments to take place during the detailed design stage. A siding is proposed at this site.

Carling Station is in the northeast quadrant of Carling and the rail tracks. This site is preferred as it provides the best access to commuter markets (north of Carling) and some access to the recreational market (south of Carling). Alternative locations on the west side were not recommended mainly due to ice build-up problems in the winter, and the presence of fuel oil waste.

At Gladstone Station, the southeast quadrant is superior to other options as it could make use of the pedestrian overpass at Young Street to provide access to the surrounding community. The

west side options were not promoted due to the existence of a wet ditch that may include some natural habitat.

A relatively large station envelope is proposed for Bayview Station that would encompass many station layout options in the vicinity of the rail corridor and the existing West Transitway. The station design would be fully developed at the detailed design stage.

Next Steps

The next step in the process will be the completion of the EA Report including supporting documents. Notices of Submission will be advertised in local newspapers once the final Report is submitted to the Ministry of Environment (MOE) for approval.

The MOE will also make the EA Report available for public and agency review. The MOE will prepare a written review which will then be available for public comment prior to a final decision by the Minister.

Provided that an Agreement is reached between the Region and CP Rail with respect to the implementation of the light rail pilot project, negotiations with property owners will have to take place for lands required for stations and primary pathway connections that extend beyond the rail corridor property limits.

PUBLIC CONSULTATION

Regular meetings were held with the Technical Advisory Committee (TAC) and the Public Advisory Committee (PAC) to seek input, direction, and concurrence on the evaluation process and study findings.

TAC is composed of representatives from the NCC, Public Works, Parks Canada, Agriculture Canada, Transport Canada, City of Ottawa, Carleton University, and OC Transpo. PAC membership included representatives from the Regional Transit Advisory Committee, Regional Cycling Advisory Group, Ottawa Pedestrian Advisory Group, Accessible Transit Advisory Committee, Women's Action Centre Against Violence, Transport 2000, Carleton University Students Association, Carleton University Rideau River Residence Association, Hintonburg/LeBreton Community, Glebe Community Association, Dows Lake Residents' Association, Traverse Drive, Hunt Club Community, Heron Park Community Association.

In addition to the TAC and PAC meetings, the Study Team also reported to the Light Rail Pilot Project's Steering Committee and Sounding Board. A special meeting was also arranged with the residents of Traverse Drive on 11 February 1998, to discuss specific local issues.

Three sets of Open Houses were held for January 13 and 14, February 17 and 18, and April 28, 1999, which were well attended. The public was informed of these meetings through newspaper advertisements and mail-drop notices.

CONFORMITY TO OFFICIAL PLAN AND TRANSPORTATION MASTER PLAN

The CP corridor is identified in the Official Plan and TMP as a rail transit corridor. This EA Study is required to implement a pilot project as defined by the OP and TMP, and can be used in the future (perhaps with amendments) if the project is delayed or modified.

COMMENTS FROM REGIONAL CYCLING ADVISORY GROUP

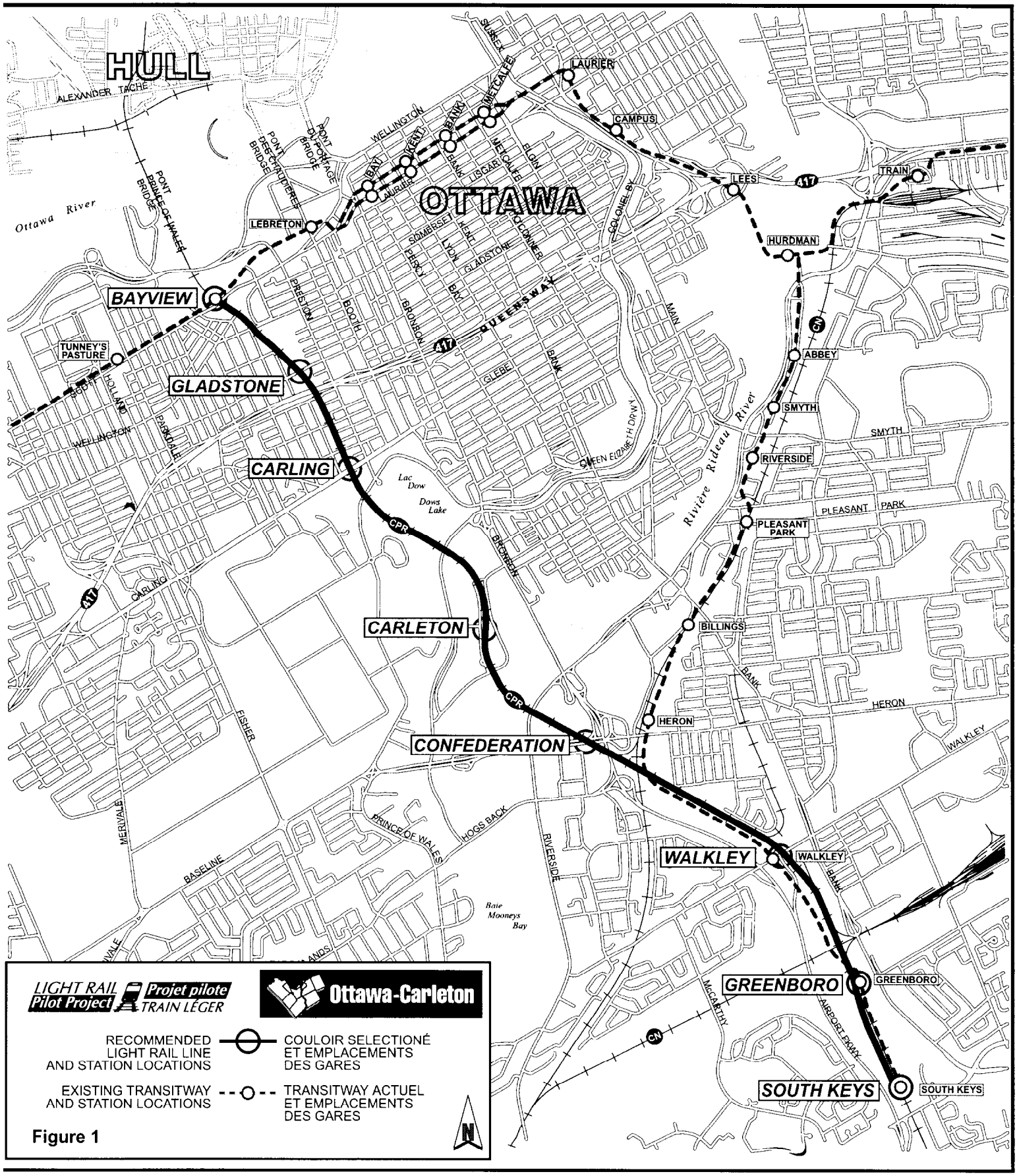
RCAG was consulted and represented on the Public Advisory Committee.

FINANCIAL COMMITMENT

The approval of the EA recommendations and filing of the EA Report with the Ministry and Federal agencies for approval does not commit Council to the implementation of the Light Rail Pilot Project at this time. That commitment decision would take place once CP Rail submits a formal proposal on the capital and operating costs of the Light Rail Pilot Project.

Approved by
N. Tunnacliffe, MCIP, RPP

VC/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OTTAWA
Ottawa River
ALEXANDER
TACHÉ
PONT PRINCE OF WALES BRIDGE
PONT DESCHÊNES BRIDGE
PONT PORTAGE BRIDGE
WELLINGTON
SUSSEX
LAURIER
CAMPUS
METCALFE
KENT
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LEBRETON
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HENRY
LYON
PERCY
GLADSTONE
O'CONNOR
COLONEL BY
HURDMAN
BAYVIEW
PRESTON
BOOTH
BRONSON
QUEENSWAY
MAIN
TUNNEY'S PASTURE
SCOTT
HOLLAND
PARK DALE
GLEBE
ABBEY
SMYTH
GLADSTONE
QUEEN ELIZABETH DRWY
Rivière Rideau River
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CARLING
Lac Dow
Dows Lake
PLEASANT PARK
CPR
CARLETON
BILLINGS
HERON
CONFEDERATION
FISHER
MERIVALE
PRINCE OF WALES
HOGS BACK
RIVERSIDE
WALKLEY
BASELINE
Baie Mooneys Bay
GREENBORO
McCARTHY
AIRPORT PKWY
CN
SOUTH KEYS
LIGHT RAIL Pilot Project
Projet pilote TRAIN LÉGER
Ottawa-Carleton
RECOMMENDED LIGHT RAIL LINE AND STATION LOCATIONS
COULOIR SELECTIONÉ ET EMPLACEMENTS DES GARES
EXISTING TRANSITWAY AND STATION LOCATIONS
TRANSITWAY ACTUEL ET EMPLACEMENTS DES GARES
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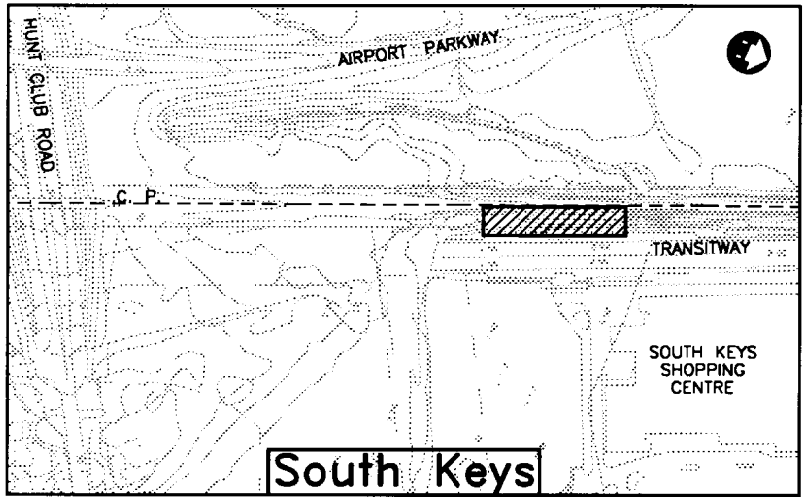
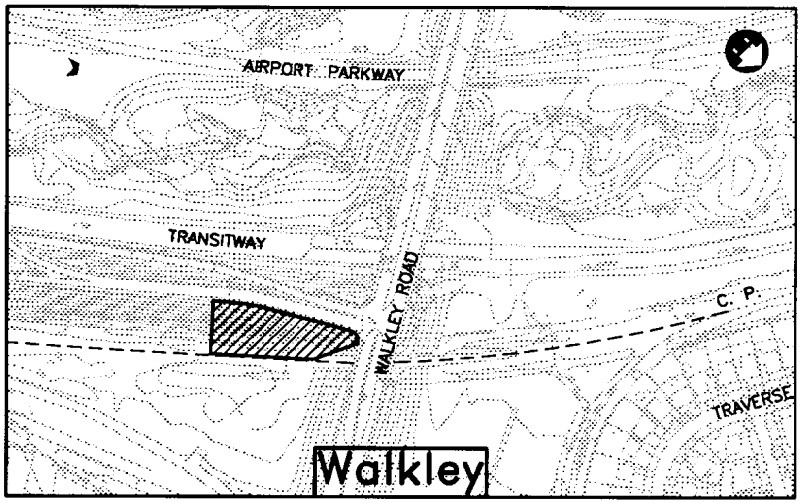
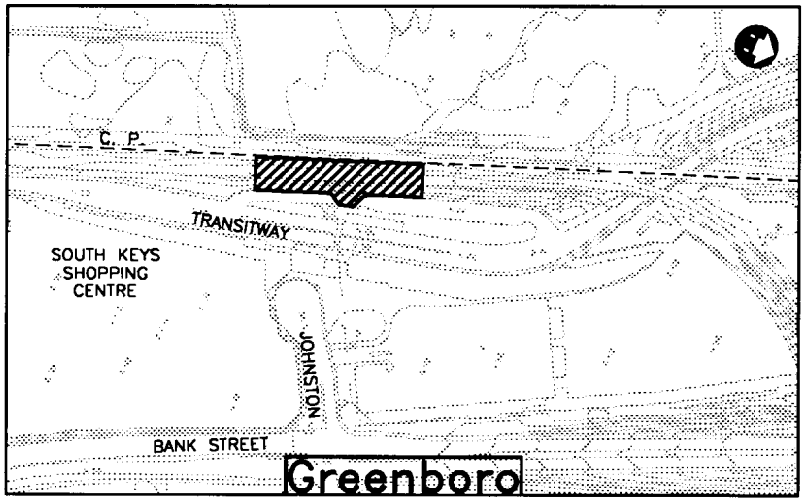
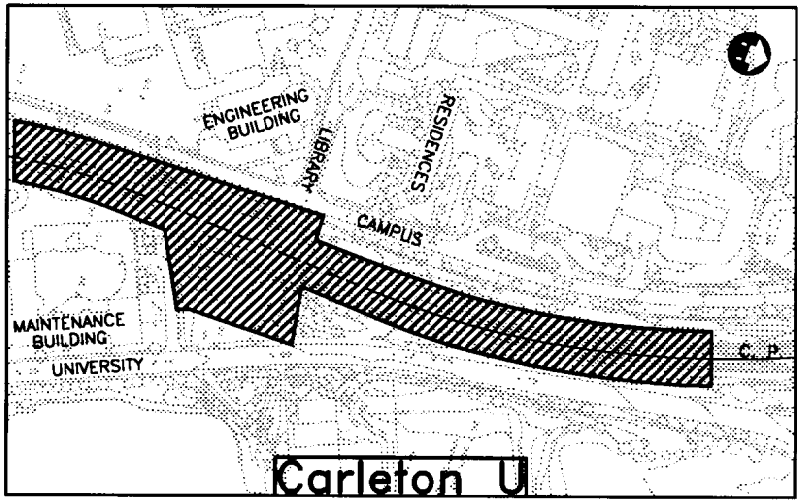
Figure 1









LIGHT RAIL Pilot Project / Projet pilote TRANSITGIR

PREFERRED STATION ENVELOPES

LIGHT RAIL PILOT PROJECT
ENVIRONMENTAL ASSESSMENT STUDY

DATE: APR. 1999
SCALE: 1: 5000
FIGURE. NO. 2

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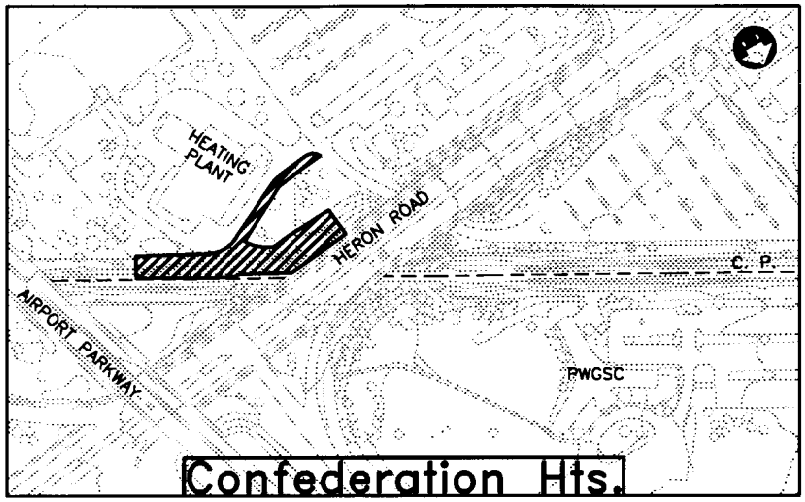

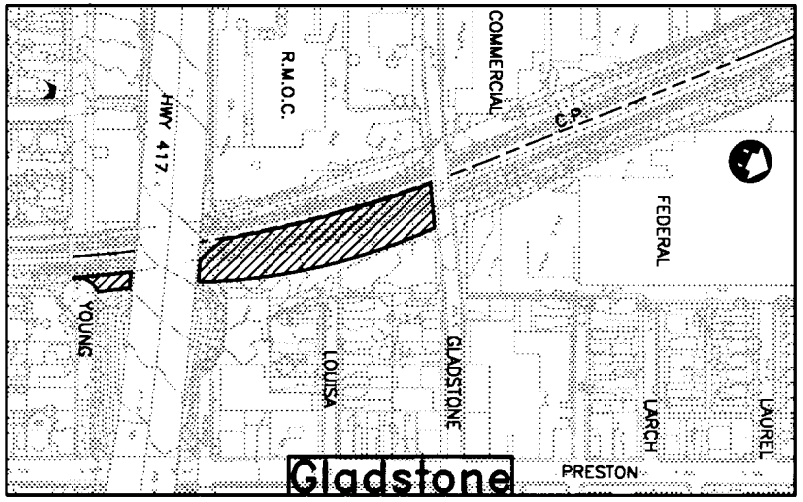

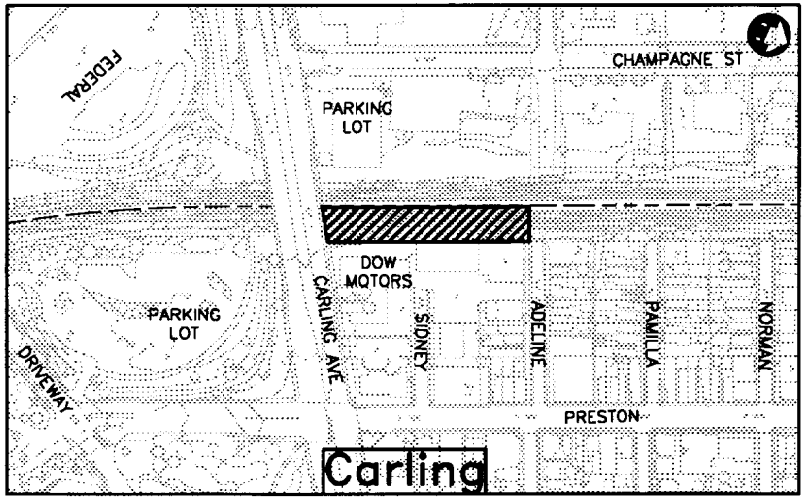

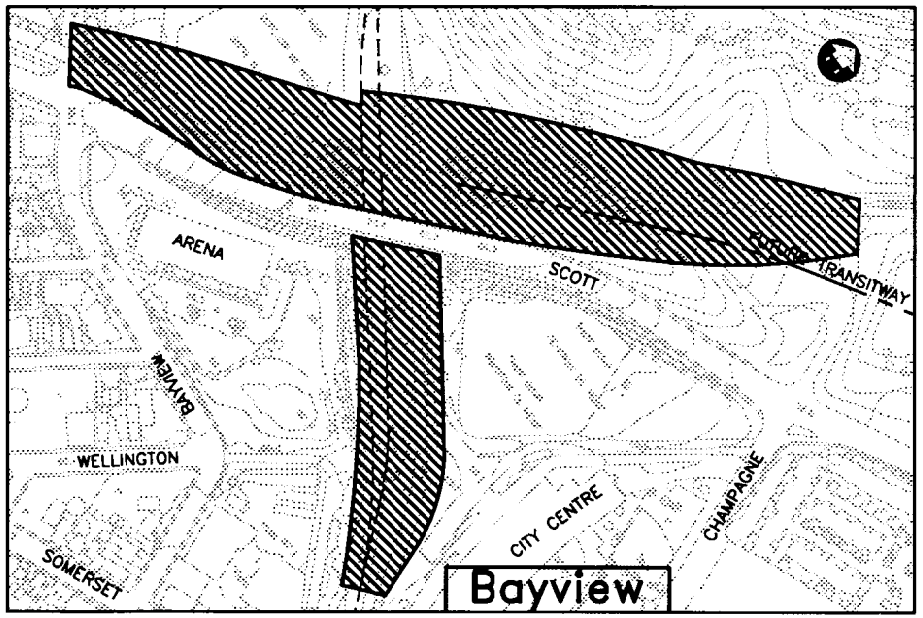

LIGHT RAIL Pilot Project / Projet pilote TRANSITGIR

PREFERRED STATION ENVELOPES

LIGHT RAIL PILOT PROJECT
ENVIRONMENTAL ASSESSMENT STUDY

DATE: APR. 1999
SCALE: 1: 5000
FIGURE. NO. 2A

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