

ITEM 14
MANAGER'S REPORT NO. 78
COUNCIL MEETING 85/12/16

RE: ALRT PARK-AND-RIDE (Item 7, Report No. 60, 1984 October 01)

MUNICIPAL MANAGER'S RECOMMENDATION:

1. THAT the recommendation of the Director Planning & Building Inspection be adopted.

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TO: MUNICIPAL MANAGER 1985 December 11
FROM: DIRECTOR PLANNING & BUILDING INSPECTION Our File: 08.860
SUBJECT: ALRT PARK-AND-RIDE

RECOMMENDATIONS:

1. THAT the Municipality pursue the development of multi-purpose (including park-and-ride) off-street parking in conjunction with new development in the vicinity of the Metrotown ALRT station.
2. THAT Council authorize staff to further review the development of short term temporary off-street surface parking in the vicinity of the Edmonds ALRT station.
3. THAT Council endorse the phased incremental approach to the management of on-street parking in the vicinity of ALRT stations in the Municipality, as described in this report (Part C).

SUMMARY:

This report presents estimates of the potential demand for park-and-ride in the vicinity of ALRT stations in Burnaby. In the absence of off-street park-and-ride capacity it had been anticipated that the park-and-ride demand would create major problems by competing for available existing parking space. The analysis carried out for this report indicates that the overall magnitude of the park-and-ride demand will not be sufficient to warrant a major response in advance of the ALRT system entering revenue service. Accordingly, an incremental approach to the management of on-street parking in the vicinity of ALRT stations is proposed. Initial reliance will be placed on Section 6 of the existing Burnaby Street and Traffic By-law which limits on-street parking in front of private property to 3 hours between 8:00 a.m. and 6:00 p.m. The By-law will be enforced upon complaint.

The evaluation of ALRT demand also has implications for the potential role of off-street parking. The key stations that have been identified are Metrotown and Edmonds. In Metrotown, the Municipality has been accepting payments in lieu of required parking with a view to developing one or more consolidated multi-purpose facilities. Since even a relatively small demand for park-and-ride in the Metrotown area would compete for the parking required for other uses it would be appropriate that park-and-ride be one of the purposes served by such a facility. The appropriate location which would serve park-and-ride purposes would be in the core area as close as possible to the Metrotown ALRT station.

At the Edmonds station the potential park-and-ride demand is greatest. The 'normal' demand for park-and-ride will be supplemented by demand pressure from North Delta/Surrey commuters during the period between the opening of the Annacis system and the extension of ALRT across the Fraser River to Surrey. Before then, Expo 86 will also create an unquantified but potentially large demand pressure for park-and-ride. Edmonds, as the outlying station in Burnaby, will be subject to the greatest pressure from this source. The provision of dedicated off-street park-and-ride is not an economic proposition in this Municipality given the cost of land and the low expected revenue. However, the availability of currently undeveloped or underdeveloped land in the vicinity of the Edmonds station suggests that provision of off-street surface parking as an interim use to meet the extraordinary demands of Expo/Annacis may make some sense.

R E P O R T

INTRODUCTION

At its meeting of 1984 October 22, Council received a staff report on "The Provision of Park-and-Ride at ALRT Stations in Burnaby" (Item No. 7, Municipal Manager's Report No. 60, 1984 October 01). That report reviewed the implications meeting park-and-ride demand relative to adopted municipal transportation policies. Largely on the basis of this policy review it concluded that park-and-ride facilities in this Municipality were inappropriate, primarily, but not exclusively because they would erode the effectiveness of the public transit feeder system. In its review of the report Council took a more flexible approach and adopted the following recommendations:

- "1. THAT there be no provision of off-street park-and-ride facilities by the Municipality at ALRT stations in Burnaby at this time.
2. THAT the Director Planning & Building Inspection be requested to investigate locations and methods whereby park-and-ride facilities could be provided should the need arise."

That previous staff report also indicated that the Municipality would need to develop a strategy to address potential problems arising from park-and-ride demand competing for existing parking supply. The purpose of this report is to respond to Council's concerns regarding off-street parking as well as address the problems created on the street by park-and-ride demand.

This report deals with three distinct issues. Part A presents estimates of the maximum potential demand for parking at ALRT stations by motorists who park-and-ride. Part B reviews the feasibility of providing off-street park-and-ride facilities at the stations. Part C outlines the strategy that our Engineering Department is employing to deal with on-street park-and-ride.

A. PARK AND RIDE DEMAND

The previous staff report of 1984 October 01 identified the potential for park-and-ride demand but did not include any estimates that quantified the demand. Since that time we have extensively reviewed and analyzed the available data in order to forecast the

amount of park-and-ride that may occur at each station. Extensive use has been made of the GVRD EMME/2 transportation model particularly with respect to determining the park-and-ride catchment area and estimating commuter travel volumes. Survey data published by the City of Vancouver has been used to corroborate and extend model data and to validate several key assumptions. Our estimates are discussed below and listed in Table II attached.

1. Park-and-Ride Commuting

We have assumed that park-and-ride as a travel mode is restricted to journeys to downtown destinations. ALRT is not competitive with the car in terms of travel time-travel cost for intermediate destinations where the number of trip ends in proximity to ALRT stations is small relative to the number of trip ends in the downtown core.

In 1983 the City of Vancouver carried out a downtown employee work trip survey (DEWTS). The published results of this survey provides us with considerable insight into travel behaviour to downtown particularly as it relates to modal choice. The survey results for travel mode choice for the southern part of the Municipality (south of Lougheed Highway) and New Westmisnter are shown in Table I attached.

The data in Table 1 indicates the high level of transit usage for work journeys ending in the downtown area. The DEWTS study found that less than half of the transit users were 'transit captive', i.e., they did not have a driver's licence or access to a car. Conversely the DEWTS study also found that about two-thirds car users could be considered as 'automobile captive'. It is reasonable to assume that all existing commuters who use transit will continue to do so because their post ALRT journey times will on average decrease. The car commuters that are not auto captive will be susceptible to converting to transit.

Figure 1 shows the potential catchment area for ALRT commuting to downtown. Within this area we estimate that it is faster to park-and-ride ALRT to downtown rather than use the private car. In defining the catchment area boundary we assumed a minimal park-and-ride transfer time in order to offset the effect of ignoring cost differentials between park-and-ride and car commuting.

The GVRD transportation model has been used to estimate the total number of cars (500) commuting from this catchment area to the primary ALRT catchment area downtown. This estimate has been validated against data published in 1977 traffic survey carried out by the City Engineering Department. Up to one-third of the 500 cars within our catchment group can be converted to ALRT (the rest are car captive). Obviously some drivers particularly those who share in the vehicle for journey downtown or live at the fringe of the catchment area, will not convert. Still others will find that using feeder bus system will meet their needs. Unfortunately, the ALRT/bus integration plan will not be implemented when the rapid transit system enters revenue service. A safe assumption is that there will be a maximum 150 drivers who will become park-and-ride commuters.

2. Park-and-Ride for Other Daytime Journeys

There is no current data available on travel patterns outside of morning peak hour (more will be known when the current regional origin-destination travel survey is concluded and the results become available). The 1977 Vancouver traffic survey does contain information on origin and destinations and modes of travel during the average mid-day peak hour. Typically mid-day hour car trips downtown are about 25 percent of the 7:00 a.m. to 9:00 a.m. commuter total. If we assume that mid-day trips have an average duration of 4 hours then the maximum accumulation of off-peak daytime commuters would be equal to the number of a.m. park-and-ride commuters. This implies that the other assumptions made regarding a.m. park-and-ride apply to the mid-day.

3. The Annacis Factor

Model data and observation indicate that at present North Delta and Surrey drivers travelling downtown use either the George Massey Tunnel (the Vancouver-Blaine freeway) or the Port Mann Bridge (Trans Canada Highway freeway) to minimize their travel time. Patullo Bridge congestion limits its use to shorter distance commuting. When the Annacis system opens the commuter model forecasts that it will have a 'downtown' commuter catchment area that encompasses most of North Delta. Because of the re-shuffling of trips amongst the Fraser crossings, the Patullo Bridge would also have a limited downtown commuting catchment area tributary to the King George Highway. Motorists using these two bridges, particularly the ones using Annacis, will be tempted to try park-and-ride because they would be chasing (and not catching) the ALRT along the New Westminster-Downtown corridor.

These two bridge catchment areas contain about 500 motor vehicles commuting to the ALRT catchment area downtown. This virtually doubles the park-and-ride potential at the existing Burnaby/New Westminster ALRT stations. When the ALRT is extended across the Fraser River from New Westminster to Surrey it will have the potential to intercept commuters from a much wider catchment area that includes virtually all of Surrey and North Delta. In the interim, B.C. Transit will be opening a park-and-ride lot at Scott Road in 1986 May (at the site of the future ALRT station). B.C. Transit will operate a shuttle bus service between that park-and-ride lot and the ALRT terminus in New Westminster. At first sight the travel times implied by this arrangement suggest that it might not be very attractive to park-and-ride commuters. However, model results show that after Annacis opens there will continue to be congestion at the Patullo Bridge during the peak periods. Thus the attractiveness of the Scott Road park-and-ride shuttle bus will be enhanced if buses are allowed to queue jump on the approaches to the bridge.

On balance we estimate that the maximum potential park-and-ride usage as following the Annacis opening would be at most 100 vehicles. These would be concentrated at the 22nd Street station in New Westminster and/or at the Edmonds station in Burnaby. If we apply the same rationale that we have developed for off-peak Burnaby and New Westminster park-and-ride estimates

then the off-peak maximum accumulation of park-and-riders would be about the same as the commuter number.

4. Special Events - Expo

It is difficult to predict what park-and-ride demand would be for evening travel and travel to downtown special events at the B.C. Place Stadium or Expo. We would expect that the car will continue to be the dominant mode for travel to the downtown social purposes, evening shopping, etc. The car is very convenient for these types of trips and the cost of travel and parking is probably not perceived as a major deterrent. In any case, with two or more people travelling in a car, the out-of-pocket costs are in the same order as travelling by public transportation. Although there is limited parking at the stadium, people do manage to park and many accept a fairly long walk. Park-and-ride might be more attractive since walking time would be reduced but people may be deterred from using rapid transit because a major event at the stadium would generate demand in excess of short run capacity with the result that people would have to queue and wait to board a train.

The major unknown factor in the estimation of park-and-ride is Expo 86. Expo will influence park-and-ride in two ways. Firstly, Expo will compete for the already scarce downtown parking that is available thereby forcing people who are travelling downtown for other activities to consider alternative modes of travel. Secondly, the shortage of space near the Expo site will encourage Expo visitors to seek other modes of travel. Park-and-ride will be an attractive alternative, particularly since many will undoubtedly regard travel on the ALRT as part of the "Expo experience". B.C. Transit has proposed beefing up its routes feeding Expo and is intending to create park-and-ride lots to serve Expo visitors (including the Scott Road park-and-ride). At this time we have no estimate of the magnitude of the problem that Expo visitors might generate in the vicinity of ALRT stations in Burnaby but we will be pursuing this issue further. The Expo park-and-ride demand could potentially be addressed by an interim facility as further discussed below.

B. OFF-STREET PARK-AND-RIDE

As instructed by Council, we have further reviewed the possibility of providing off-street parking for park-and-ride purposes in the vicinity of ALRT stations in the Municipality. This review has included an assessment of the demand as discussed previously, as well as an estimation of the cost for providing park-and-ride. Figure 2 attached shows a graph that plots the cost of off-street parking as a function of the unit cost of land. The graph shows that multi-storey car parking becomes cost effective when land values exceed \$30 per square foot.

Thus, a multi-storey car park would require net daily revenue in excess of \$5 per stall to break even (assuming 10 percent interest rate over 25 years and 80 percent occupancy six days per week). Clearly, parking is not a profitable business. Notwithstanding high parking charges, the City of Vancouver's newer multi-storey car parks are cross-subsidized. The revenue expectations for park-and-ride in the Municipality must be regarded as negligible.

If the Municipality participates in the provision of off-street park-and-ride, it would be doing so to further wider goals and objectives. The potential for off-street park-and-ride facilities at each station are discussed below.

1. Patterson Station

On the basis of the travel time catchment area analysis, Patterson station has the lowest potential demand for park-and-ride of all the stations in the Municipality. Accordingly, any park-and-ride sited there would have to be attractive, and as close to the station as possible. There are only two undeveloped parcels within a convenient distance of the station. Both of these are earmarked for high density residential development. We have considered the possibility of mixing ALRT park-and-ride with residential development but the two uses would not be complementary. The possibility of development underground parking in Central Park has been mentioned in the past but the terms of our lease for the park prohibit its use for non-park purposes. Underground parking is also very expensive - the cost per stall could approach \$20,000. The possibility of using the B.C. Hydro rail/ALRT right-of-way for park-and-ride has also been suggested. However any substantial encroachment onto the right-of-way which is shared by ALRT, the freight railway and the B.C. Parkway, would substantially prejudice the viability of the Parkway plans.

2. Metrotown Station

Although the estimated demand for park-and-ride is low for the Metrotown stations (90 vehicles) the potential park-and-ride problem is more serious at Metrotown than at Patterson station. With core area development, park-and-riders will compete for space, both on-street and off, with users of the commercial area. In addition some of the older two and three storey walk-up apartments south of Metrotown station do not have sufficient off-street parking. Considerable reliance is placed by residents on on-street parking availability

For some time now, the Municipality has been considering the possibility of providing one or more centralized parking facilities in the Metrotown area. The Municipality has been permitting optional payments in lieu of off-street parking with the view that these funds would subsequently be used for centralized publicly controlled off-street parking. There is a strong rationale for locating a centralized parking facility in the vicinity of the ALRT station so that it is attractive to park-and-ride and core area users alike. Because the land in close proximity to the station is the most desirable for both park-and-ride and higher density development, it would make sense to integrate additional public parking with high density development to maximize the benefits for all uses.

3. Royal Oak Station

The Municipality does not own any land in the proximity of Royal Oak station that could be used for park-and-ride. We have identified potential sites along South Beresford near Antrim which could be used singly or together to develop an off-street surface parking lot. Depending on the extent of

purchase, a surface parking lot with a capacity of 80 to 160 cars could be developed at a unit cost of \$7,000 to \$9,000 per parking stall. Our conclusion is that it would not make sense for the Municipality to participate in the development of off-street parking at Royal Oak station.

4. Edmonds Station

The area around Edmonds station will potentially experience the greatest for park-and-ride pressure. Of the four stations in the Municipality, it has the largest catchment area for park-and-ride. This park-and-ride catchment potential will extend into North Delta/Surrey with the opening of the Annacis system. As demonstrated previously, park-and-ride is not an economic proposition. However, if park-and-ride is to be considered as an interim use, then its development at Edmonds makes some sense. There are a number of possible sites. The closure of the Dominion Glass plant creates an opportunity for an interim park-and-ride facility. Dominion Glass has employees' surfacing parking for about 160 vehicles. Although on the 'wrong' side of the ALRT station, this parking lot is conveniently close to it.

The Municipality also owns substantial property south of Stride. This property could be cleared, graded and surfaced to provide space for up to 1300 vehicles. Unfortunately these properties are not conveniently located relative to the ALRT station. Even if the distance to the station were minimized through the development of a trail to the station from Stride there would be a 7 to 8 minute walk from car to station. This distance/time would undoubtedly be sufficient to deter park-and-ride commuters but may not be considered a major problem by park-and-ride visitors to Expo.

It would cost between \$400 to \$500 per space to provide an interim parking lot on these municipal lands. To break even on such an interim lot, each stall would have to generate in the order of \$3.00 per day, 7 days a week for the duration of the world's fair. We do not think it would make much sense for the Municipality to participate in such a venture unless there was some participation by other agencies such as Expo and/or B.C. Transit.

C. ON-STREET PARKING

We have made estimates of the capacity and availability of on-street parking in the vicinity of each of the ALRT stations in Burnaby. To do this we have inventoried parking-related data on a link-by-link up to a distance of 600 metres around each station. Figure 3 (A, B, C & D) shows cumulative on-street parking capacity as a function of the radial distance from each of the ALRT stations in the Municipality. Those graphs also include the (cumulative) on-street parking that was observed from recent aerial photography. The aerial photography took place on a weekday mid-morning and hence may not represent the maximum current demand.

We estimate that at 400 metres airline distance the average walk to an ALRT station will be 5 to 6 minutes. This would probably be the maximum time that most park-and-ride users would walk. Within the

400 metre distance, it is apparent that there is, on aggregate, sufficient on-street parking available to absorb the estimated park-and-ride demand. However, because park-and-ride commuters would park as close to the station as possible we anticipate that problems may well arise on some streets close to stations. Problems may also arise on streets where the on-street parking capacity is required by adjacent land uses that do not have sufficient off-street parking available. The single family residential areas around stations usually have ample on and off-street parking but past experience shows that some residents may perceive "strangers" parking in front of their house as an unwelcome intrusion.

There is a range of regulatory measures that can be employed to deal with problems created by on-street parking. Ideally these regulations should be used on a selective link-by-link basis to ensure that they are not counter-productive. Our estimates of the demand for park-and-ride suggest that the problem may not be a major one. Accordingly, it would make sense to proceed slowly to ensure that the regulations that we do implement are warranted and address a real problem.

We anticipate that the park-and-ride demand patterns will take some time to stabilize. Initially, people will experiment with using ALRT. It will not be until after the full ALRT/bus integration plan is implemented on 1986 March 07 that some equilibrium will be achieved. In the interim, the Engineering Department will use Section 13(6) of the Burnaby Street and Traffic By-law (#4299) to control problems. This By-law prohibits parking in front of any property in Burnaby for longer than three hours between 8:00 a.m. and 6:00 p.m. The Engineering Department will be posting warning signs at the ALRT stations to apprise the commuters of this By-law. The By-law will be enforced on the basis of individual complaints which will be logged. The complaints and monitoring by staff will ensure that problem areas will be dealt with. We anticipate that in some areas, we may have to proceed on an incremental link-by-link basis with selective on-street restrictions. For example it may be necessary to limit parking duration in front of commercial premises to 1 or 2 hours to ensure parking turnover. Council will be kept abreast of staff action and findings.

DISCUSSION AND CONCLUSIONS

Our analysis of the potential park-and-ride demand at ALRT stations in the Municipality suggests that the problem that had been foreseen may have been overstated. The level of demand we have projected is low, to the extent that it seems counter intuitive. In the presence of uncertainty, it makes sense to take a cautious incremental approach to dealing with the problem. As the problem develops and to the extent that it develops the Municipality should react with the appropriate on-street parking regulations.

Our analysis of the cost of providing off-street park-and-ride confirms that it is not an economic proposition. Nonetheless, it may well make sense for the Municipality to cater for park-and-ride in Metrotown to safeguard parking availability for other uses. To do this, the Municipality should participate in providing extra public parking as part of a comprehensive development in the vicinity of the Metrotown ALRT station.

It is clear that park-and-ride demand at Edmonds will be higher than at the other stations in the Municipality. A significant component of this demand will be an interim one during the period between the opening of the Annacis system and the completion of the ALRT extension to Surrey. Provision of space to meet this demand as well as the unquantified but potentially large demand for Expo may be worthwhile. There is vacant land in the vicinity of the station where this parking could be developed. The best sites are west of the Edmonds ALRT station and in private ownership. The closure of Dominion Glass plant raises the possibility of using the existing employee parking lot on an interim basis. Further from the station the Municipality owns considerable property which might be attractive as an Expo park-and-ride lot particularly if B.C. Transit and/or Expo were willing to participate in its development.



A.L. Parr
DIRECTOR PLANNING &
BUILDING INSPECTION

PL/mcb
Attachs:

cc: Director Engineering

TABLE I DOWNTOWN COMMUTING - MODAL SPLIT (PERCENT)

AREA OF ORIGIN	AUTO		BUS		SAMPLE SIZE (NO.)
	DRIVER	PASSENGER	WALK AND RIDE	PARK AND RIDE	
CENTRAL BURNABY	33.3%	6.3%	49.2%	11.1%	126
SW BURNABY	28.0	10.9	53.4	7.8	193
NEW WESTMINSTER	20.8	5.2	68.8	3.9	77
ALL ORIGINS	29.2	9.2	47.3	7.0	5042

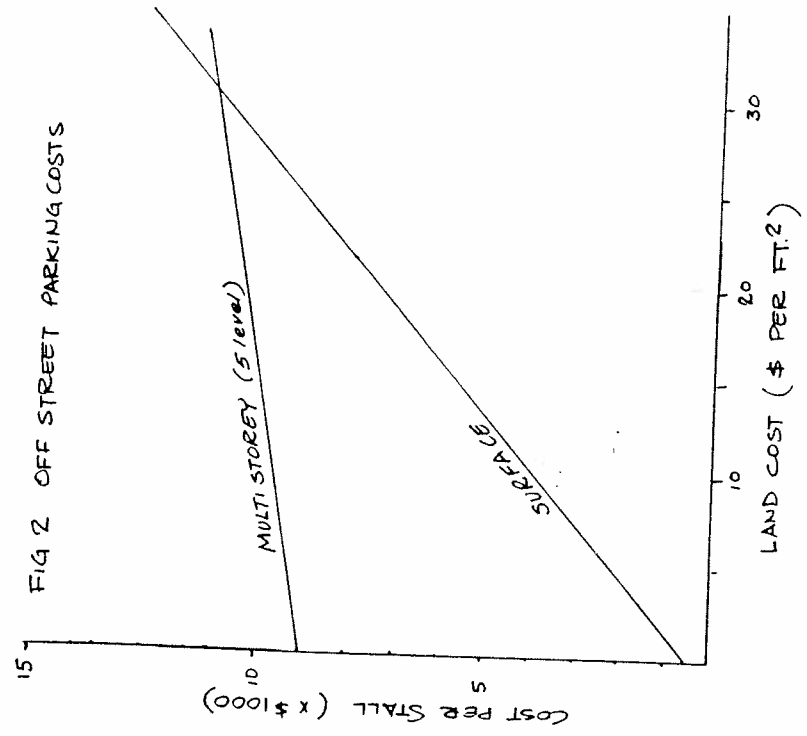
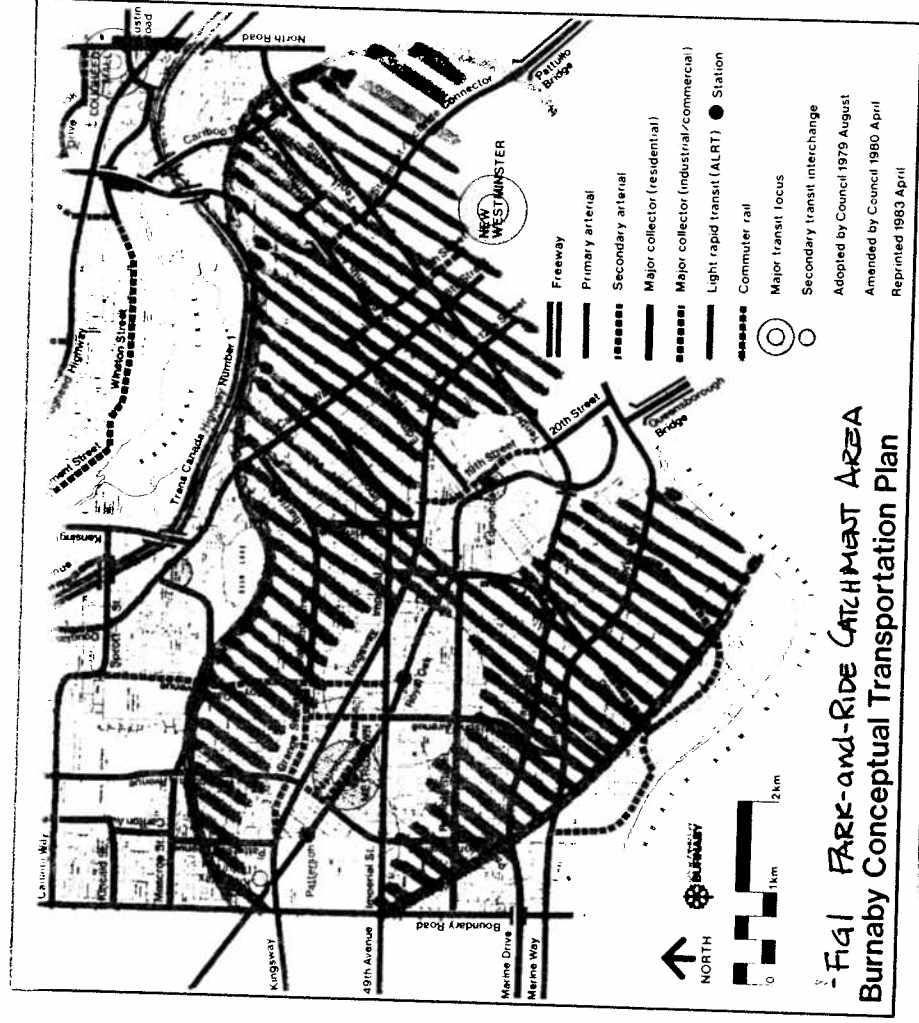
SOURCE 1983 "Downtown Employee Work Trip Survey" (DEWTS) (DEWTS)
 CITY OF VANCOUVER Engineering Dept., 1984

TABLE II ALRT PARK AND RIDE DEMAND POTENTIAL (VEHICLES) (1)

DEMAND COMPONENT	STATION			TOTAL
	PATERSON/ METROTOWN	ROYAL OAK	EDMONDS/ 22 ND ST.	
BURNABY / NEW WESTMINSTER (2)				
COMMUTERS	45	30	75	150
MIDDAY ACCUMULATION	45	30	75	150
SUBTOTAL	90	60	150	300
NORTH DELTA / SURREY (3)				
COMMUTERS			100	100
MIDDAY ACCUMULATION			100	100
SUBTOTAL			200	200

NOTES : 1 PARK AND RIDE DEMAND ESTIMATES ARE FROM VARIOUS DATA SOURCES. THE NUMBERS ASSUME A MAJOR SHIFT FROM CAR TO PARK AND RIDE
 2 NO PARK AND RIDE HAS BEEN ALLOCATED TO DOWNTOWN NEW WESTMINSTER
 3 APPLICABLE BETWEEN OPENING OF ANNACIS (SEPT 86) AND ALRT EXTENSION TO SURREY

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FIG. 3 ON STREET PARKING SUPPLY AT
BURNABY ALRT STATIONS. 157

