

have to be considered and the possible widening of Old Potch Road can be an option. Figure.04 displays the proposed cross section for the widening of Old Potch Road to a 6-lane divided road. The existing nurses pedestrian bridge will have to be demolished in order to accommodate the widening of the road. The widening will have little impact on the main pedestrian bridge.

The results from the capacity analyses for the above-mentioned intersections are given in Annexure 02.

The co-ordination of the four intersections along Old Potch Road was also tested and they should operate well in both peak hours with a synchronised cycle time of 70 seconds. A detailed analysis will have to be conducted at the detail design stage.

## 8. ALTERNATIVE ROAD ALIGNMENTS

Alternative road alignments, taxi holding surveys, bus surveys and pedestrian bridge surveys were undertaken some of which are set out elsewhere in the report. Detailed findings can be made available on request.

A number of alternative road alignments were evaluated.

The most feasible were:

### ALTERNATIVE B:

Re-align Old Potch Road to the south keeping the existing westbound carriageway, adding a concrete barrier median and a new two-lane carriageway between the existing road and the hospital wall. The existing eastbound carriageway becomes available for redevelopment. In this alternative the existing at-grade mid-block access to the rank is retained.

### ALTERNATIVE D:

Both carriageways raised and re-aligned to the south with a pedestrian underpass, located as near to the main pedestrian bridge as possible. Also included in this alternative is an at grade public transport service road next to the hospital wall with a vehicle underpass providing mid-block access to the rank linking with West Road

After taking into account all comments received, geometric constraints, traffic impact (mobility), vehicular flow, pedestrian movements, future land use development, construction costs and affected engineering services the project team selected Alternative B.

Table : Advantages and Disadvantages for Alternative B and D

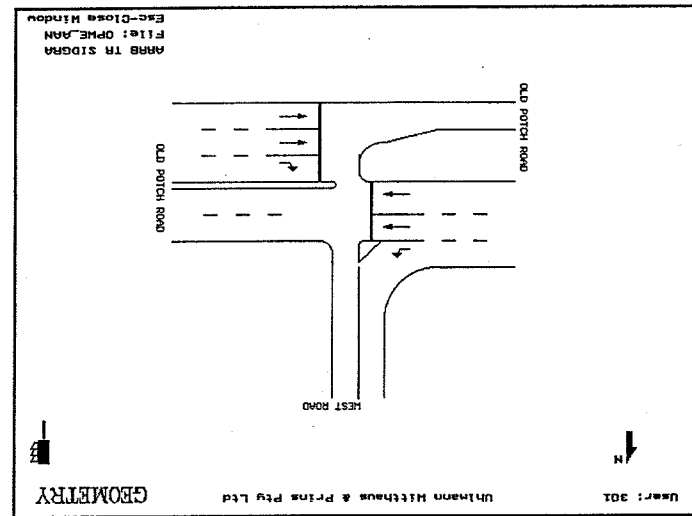
ALTERNATIVE D	ALTERNATIVE B
<p><b>Advantages:</b>                      Free flow traffic on Old Potch Rd                      Mid-block entrance to taxi rank as required                      Pedestrian underpass at required location                      Easy accommodation of short distance buses                      Retain nurses bridge</p>	<p><b>Advantages:</b>                      Retain the use of both pedestrian bridges                      Mid-block entrance to taxi rank                      Utilisation of existing southern carriageway                      Easy accommodation of short distance buses                      It is estimated that this alternative would be more than 50% cheaper than Alternative D</p>
<p><b>Disadvantages:</b>                      Reconstruction of both carriageways                      Public transport and pedestrian conflict at pedestrian underpass                      Limited sight distance at pedestrian underpass                      Extensive protection/relocation of services                      No or limited use for main pedestrian bridge                      Limited utilisation of existing road infrastructure                      High cost of construction</p>	<p><b>Disadvantages:</b>                      Potential for high pedestrian and vehicle conflict at specific locations                      At grade pedestrian access at intersections                      Traffic engineering wise not the best solution                      Mid-block break in median can create pedestrian problems                      Concrete barrier in median to prevent pedestrian movement across Old Potch Road</p>

- Increase in car ownership
- Public transport policies
- Land use changes (for example the development of the Orlando Power Station area and new housing schemes in the area)

#### 7.4 Traffic Impact of Preferred Future Layout of Rank

During the evaluation of the different alternatives, it became clear that the mid-block access (Intersection no. 2) to the rank would play a major role in the future. To assess the future impact of traffic growth on this intersection, a growth rate of 3.5% was applied to the through traffic on Old Potch Road. No growth was applied for vehicles entering the rank and the peak hour buses were subtracted. The growth in new taxi operators entering this market is estimated to be very low. The buses will, in future, only use the access at the Lesedi Clinic (Intersection no. 4) to enter the new bus rank. It is estimated that approximately 30 buses will use the new access in the morning and afternoon peak hours.

At present, the mid-block access (Intersection no. 2) has a double right turn lane for westbound traffic on Old Potch Road entering the rank. With the limited space available for the re-alignment of Old Potch Road, the intersection capacity was tested for a single right turn lane (as shown in the adjacent diagram). The analyses show that the intersection will operate at level of service B and A in the morning and afternoon peak hours respectively. The right turn lane would need to be approximately 80m long in order to accommodate queues that may occur under current traffic flow conditions. With a growth rate of 3.5% over the next ten years, it is predicted that the intersection will operate at a level of service C and A in the morning and afternoon peak hours respectively.



At present, the entrance to the Lesedi Clinic is on Immink road (very near to the Immink/Old Potch Road intersection (Intersection no. 5)). Although no traffic counts or geometric investigations were conducted for this intersection, it is not well located from a traffic engineering point of view. After discussions with the Lesedi Clinic management, it was proposed that the clinic re-opens their original entrance on the eastern side near the new bus rank entrance. This would mean that intersection no. 4 would also have to carry traffic generated by the clinic in future. The peak hour traffic generated by the clinic is very low and should have very little impact on the intersection. The installation of a traffic signal at intersection no. 4 was tested. Under current traffic conditions (including buses), the intersection will operate at level of service A in both the morning and afternoon peak hours. The right turn lane (westbound) on Old Potch Road need to be approximately 20m long in order to accommodate the queues that may occur. In 2010 this intersection will operate at level of service D and A in the morning and afternoon peak hours respectively.

It is predicted that in 2010, the Old Potch/East Road intersection (Intersection no. 1) will operate at level of service D and E in the morning and afternoon peak hours respectively. Many problems will occur at the intersection and road improvements will have to be considered. The upgrading of Old Potch Road from a 4-lane to a 6-lane divided road could be an option.

It is predicted that the Old Potch/Immink Road intersection (Intersection no. 5) will operate at level of service F and E in the morning and afternoon peak hours respectively. Road improvements will

**9. URBAN DESIGN AND THE ARCHITECTURE**

See accompanying plans overleaf

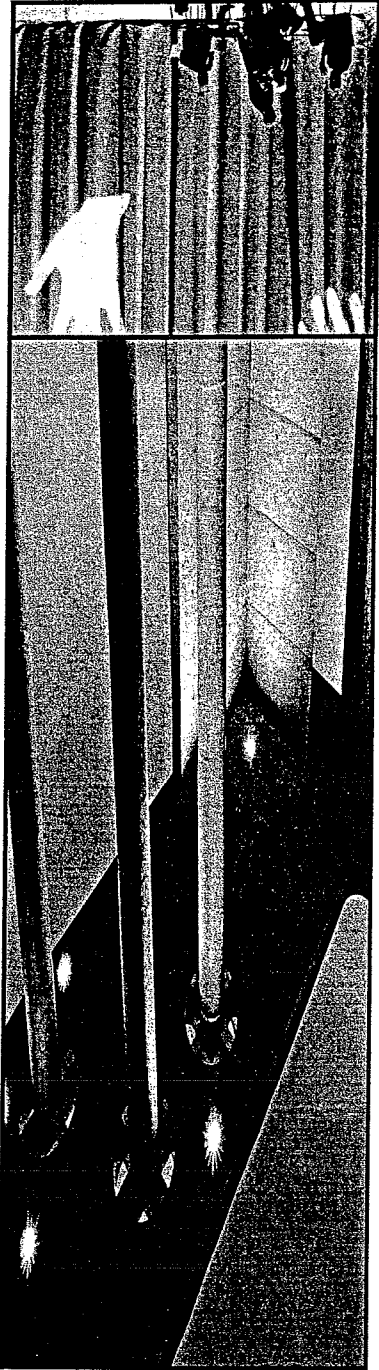
**10. COST ESTIMATES AND FEASIBILITY STUDY**

Please see overleaf

**11. POST CONSTRUCTION MANAGEMENT**

The appointment by the Council of the MTC to undertake the Formulation Phase was motivated strongly by the ability of the MTC to procure the development and to undertake the Post Construction Management of the facility. Intensive management of the facility would be necessary for the investment to retain its value and continue to provide service to the public.

B A R B A G W A N A T H  
P u b l i c T r a n s p o r t N o d e



U r b a n D e s i g n  
A r c h i t e c t u r e

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ALTERNATIVE D	ALTERNATIVE B
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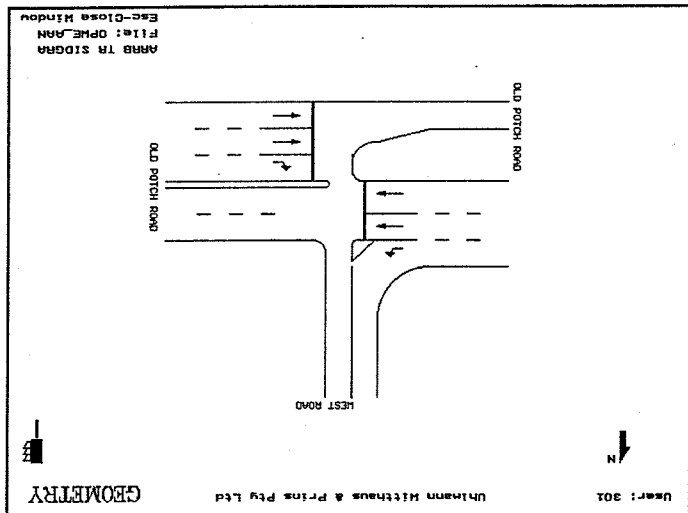
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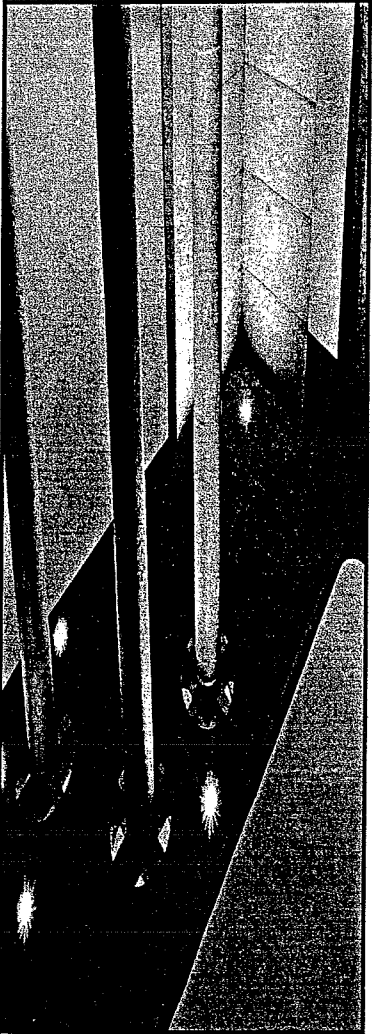
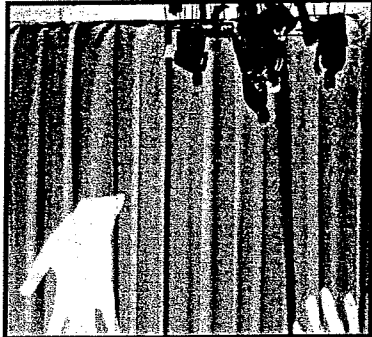
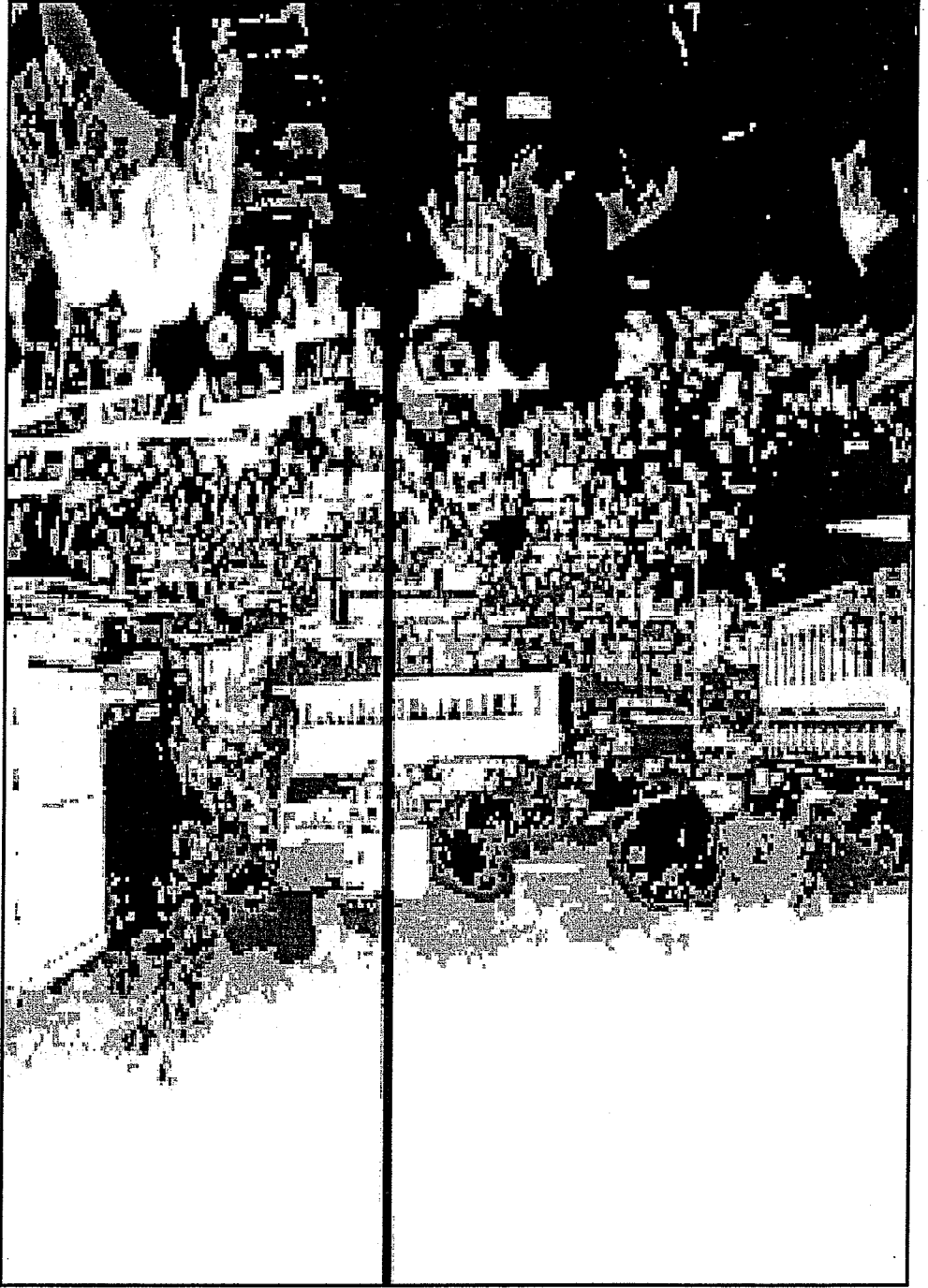
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BARBAGWANTH  
Public Transport Node



Urban Design  
Architecture