

PROMOTING TRANSIT ORIENTED DEVELOPMENT IN THE ATLANTIS CORRIDOR, CAPE TOWN: TOWARDS AN IMPLEMENTABLE MODEL

Peter Wilkinson and Antony Marks*

School of Architecture, Planning & Geomatics, University of Cape Town, Private Bag X3, Rondebosch 7701 (email: Peter.Wilkinson@uct.ac.za, tel: 021 650 2387)

*HHO Africa, Box 6503, Roggebaai 8012 (email: tony@hho.co.za, tel: 021 425 2870)

ABSTRACT

Building on an earlier examination of the broad strategic and institutional issues involved in implementing forms of transit oriented development (TOD) in Cape Town (Wilkinson 2006), this paper seeks to establish the parameters of an appropriate model for such development in the city's rapidly growing Atlantis Corridor. The model is framed in terms of an application of the concept of 'asymmetric churn' in household decision-making with regard to residential location and travel choices. This is deployed to investigate the possibility of capitalising on the specific opportunity to influence such choices in the direction of a contextually appropriate form of market-driven, public sector-facilitated TOD which appears to have been presented by the recognition of certain difficulties encountered in the dynamics of current 'greenfield' residential development in the Corridor.

The primary segment of the residential market targeted in the model is the stratum of households comprising the middle and upper layers of the so-called 'gap market', for which the range of affordable housing options potentially could be extended significantly upwards by the creation of a system of 'location efficient mortgages' linked to occupation of a TOD residential unit. On the demand side, the increased affordability of such units would be premised on the mortgage providers' understanding that such households would be in a position to make transit oriented travel choices which could then be traded off against higher mortgage loan repayment costs – in particular, by avoiding the significant costs associated with acquiring or using private vehicles on an everyday basis. On the supply side, the provision of such units by private sector developers would need to be underpinned by the establishment of an appropriate institutional framework to promote and facilitate such development, including commitment to the proposed approach from relevant agencies in both the public and private sectors.

The paper elaborates these aspects of the proposed model and notes that support for its potential feasibility has been canvassed among local private sector developers and within the financial sector. Some initial thoughts are offered on the issues that would need to be addressed in establishing the institutional preconditions to facilitate its effective implementation.

1. INTRODUCTION

This paper seeks to build on an earlier review of the high level strategic and institutional implications of promoting transit oriented development (TOD) in metropolitan Cape Town (Wilkinson 2006). The case was made there that, in general, TOD seems to present a

“potentially interesting and useful addition to the portfolio of implementational mechanisms that might be deployed in bringing about spatial restructuring and public transport system improvement in South African cities” (ibid., p.231). Additionally, and more specifically, it was proposed that, in metropolitan Cape Town, the “Northern ‘growth axis’ corridor” – here referred to as the Atlantis Corridor – might “yield space for more innovative planning and implementation of a pilot project” to promote TOD than the Klipfontein Corridor Project, which has continued to be prioritised as the ‘flagship project’ or Phase 1 of the City’s Mobility Strategy (City of Cape Town 2006).

The paper draws directly and immediately on a more detailed investigation of this particular possibility undertaken as research towards a dissertation in the University of Cape Town’s Master of City and Regional Planning Programme (Marks 2006). Proposals put forward there for implementing TOD in the Atlantis Corridor necessarily remained preliminary and provisional in nature, and were directed primarily towards issues of institutional innovation or reorganisation, rather than matters of physical or spatial design. The focus of the dissertation research on a particular market-driven, public sector-facilitated model of TOD appropriate to conditions in this Corridor limits its possible application elsewhere in the metropolitan system. We make no claim here, therefore, to address the undoubtedly quite different issues associated with other possible forms of TOD, such as schemes that might be ‘retrofitted’ into the township/informal settlement environment of the metropolitan south-east sector or the historically evolved ‘transit suburb’ environments of the proposed Southern Suburbs and Northern Suburbs Corridors (Wilkinson 2006).

The substantive body of the paper is structured around three main sections. In the section immediately following this introduction we briefly outline the concept of ‘asymmetrical churn’ in relation to the decisions made by individual households regarding residential location and the travel behaviour of their members. We suggest that a ‘window of opportunity’ may have opened in South African cities to promote ‘asymmetric churn’ in residential development processes towards patterns which more adequately reflect the socio-spatial restructuring and public transport prioritisation objectives of current policy frameworks. The subsequent, third section of the paper identifies and elaborates the potentially significant opportunity to promote TOD as a means of addressing presently unmet housing needs in the so-called ‘gap market’, which is occupied by that stratum of the population in which levels of car acquisition and use are currently increasing. We propose that a key ‘demand-side’ instrument in this regard could be the establishment of a system of ‘location efficient mortgages’ provided by the relevant financial institutions operating in concert with ‘supply-side’ interventions in the institutional framework of the residential development sector. In the fourth section, the feasibility and implications of implementing this model are then tested in its application to the specific context of the Atlantis Corridor. ‘First cut’ proposals are put forward for an appropriate framework to facilitate the piloting of TOD in the Corridor environment on a significant scale. A short conclusion indicates the degree to which these proposals have received support from private sector developers and representatives of some financial institutions, if not yet from the official City planning agencies. A critical question for further investigation is identified as concerning the way in which the proposed institutional changes might be accommodated within, or aligned to the possibly imminent establishment of a metropolitan transport authority.

2. CONCEPTUALISING 'ASYMMETRIC CHURN' IN HOUSEHOLD DECISION-MAKING AROUND TRAVEL BEHAVIOUR AND RESIDENTIAL LOCATION

The concept of 'asymmetric churn' emerged initially through efforts to explain secular (non-repetitive, non-reciprocal) change in aggregated patterns of individual travel behaviour as represented, for instance, in shifts in trip timing or mode choice which affect the composition and volume of particular traffic streams (Behrens & Del Mistro 2006). Its use here is extended to that arena of decision-making concerned with what are undoubtedly key questions to be resolved in defining an individual household's 'lifestyle' or mode of existence – where to live (what form of residential accommodation to seek and in which location/s) and how to travel (devolving, for some households at least, to the issue of whether or not to acquire some means of private transport).

The framing of choice in matters of residential location as revolving essentially around a calculated trade-off between increased transport costs and increased residential space and/or amenity in order to maximise utility within an overall budget constraint is well-established in that strand of urban economic theory which persists in elaborating simplistic distance-decay models of urban spatial structure (cf. Bassett & Short 1980). By contrast, the conceptualisation of the broader 'lifestyle' decision-making process here is framed in terms of planned or considered choices triggered by 'life shocks' – moving or buying a house, enrolling children in school, buying a car, etc – which force a reappraisal and possible reshaping of previously established household routines and behaviours (Behrens & Del Mistro 2006). Under certain circumstances, such changes at the level of individual households may aggregate into broader 'lifestyle' shifts which have an impact on patterns of residential development – and land use and movement patterns, more generally – at the level of a city as a whole. Hence, the post-Second World War 'suburban explosion' experienced by many cities in the more developed countries can be understood – at least in part – as an aggregate outcome of changing 'lifestyle' choices triggered by the possibility of a significantly increased proportion of newly formed nuclear family households acquiring their own cars for the first time.¹

Even if not on the epochal scale manifested in the 'suburban explosion', for the normal 'churn' apparent in residential development processes to become 'asymmetric' in a planned direction, it is necessary for an appropriate 'window of opportunity' to open up, to be recognised as such, and to be acted upon. A central proposition of this paper is that just such a 'window of opportunity' may now have opened up in South African cities, which presents the possibility of effecting 'asymmetric churn' in patterns of urban development towards forms that would be regarded as more appropriate and sustainable in terms of established urban policy than the present dysfunctional and inequitable forms. More specifically, there appear to be opportunities – in the major metropolitan areas at least – to promote a specific form of TOD which potentially could contribute in a limited but significant way towards the objectives of socio-spatial restructuring and public transport system prioritisation embedded in current legislative and policy frameworks (outlined in Wilkinson 2006).

The next section seeks to identify and elaborate on these opportunities.

3. OPPORTUNITIES TO PROMOTE TRANSIT ORIENTED DEVELOPMENT IN SOUTH AFRICAN CITIES: SOME GENERAL CONSIDERATIONS

An obvious feature of the South African urban housing situation – and one which is receiving increasing attention from housing policy makers and strategists (e.g. City of Cape Town 2006b) – is the existence of a significant sector of the population whose

accommodation needs have not, to date, been addressed in any effective way. The so-called 'gap market' incorporates households whose monthly income is generally held to fall in or around the R3 500-R7 500 band,² and whose housing demand is currently not catered for by either the public sector, in the form of access to subsidised 'RDP' housing, or the market – given that appropriate *affordable* housing is not being supplied by private sector on any significant scale, and that such households frequently, if not invariably, have had difficulty accessing adequate finance for mortgage loans. In general, such households would be likely to have at least one member in regular waged employment and to harbour what might be regarded as 'middle class' aspirations. Certainly they would wish to move from what is often desperately inappropriate accommodation in shared and overcrowded formal housing units, or in backyard shacks and converted garages to more substantial housing. From the perspective of this paper, however, their further importance may be that their aspirations would also generally include the ambition to acquire private transport and to use it to avoid the inconvenience, squalor and insecurity currently associated with public transport services across all three of the major modes (commuter rail, scheduled buses, unscheduled minibus-taxis).

At the national level, the 'physical need' of households in the 'affordable housing market' (with incomes in the band R2 500-R7 500/month) was estimated to be some 666 700 units in 2006, projected to increase to around 726 800 units in 2010 (Settlement Dynamics et al. 2006, slide 6). In metropolitan Cape Town, it has been suggested that as many as "165 000 people [presumably household heads] fall in the GAP [*sic*] and affordable housing markets" (City of Cape Town 2006b), although it is not clear that this represents 'physical need' in the sense used in the national estimate. However this housing market segment is defined, it is obviously not the case that all households in the relevant income band contribute to rising levels of car acquisition and use in the population as a whole. Nationally, the number of households with access to a car increased by 808 000 or 33% between 1995 and 2003 (Department of Transport 2006). Data from the 2003 National Household Travel Survey (NHTS) suggest that much of this increase would be accounted for by households earning more than R6 000/month – a stratum in which the car ownership level rises to 1.2 cars/household from 0.6 cars/household in the R3 000-R6 000/month income band (Cameron 2006).³ Although the available data evidently remain somewhat sketchy, it nevertheless seems reasonable to infer that there is a significant segment of 'gap market' households – particularly those in the middle to upper ranges of the associated income band – in which the acquisition of private transport is being, and has been, actively pursued.

Recognition of this possible tendency – which undoubtedly requires more systematic and detailed investigation – points towards a potential opportunity to address two of the most critical issues presented by current urban development trajectories in South Africa's major cities in an appropriately integrated way. On the one hand, there is a manifest need to deal with the unacceptable housing situation of a sector of the population which provides a critically important component of the urban labour force under conditions that must impact negatively on general productivity levels. On the other, there is an imperative to contain, and if possible reverse, the trend towards car ownership and use that is both an effect and a cause of declining levels of public transport usage in the major cities, particularly within this sector of the population. The rationale for this latter imperative is clearly embodied in the legislative and policy frameworks currently intended to govern urban transport provision (Wilkinson, forthcoming).

The approach within which a related cluster of issues has been addressed elsewhere – notably in the North American urban context – has been labelled 'location efficient development', and the key mechanism deployed in its implementation, 'location efficient

mortgage' programmes. In essence, 'location efficient development' is "residential and commercial development located and designed to maximize accessibility and overall affordability" (Victoria Transport Policy Institute n.d.), and is usually promoted as part of a 'New Urbanist' or 'smart growth' strategy package to reduce 'automobile dependency' in US cities (cf. Wilkinson 2006 on the parallel relationship of TOD to such strategies). The basis of 'location efficient mortgages' (LEMs) is that higher mortgage to income ratios can be offered by financial institutions in recognition of savings on household budgets achieved through residence in areas considered to be locationally efficient, where overall transport costs are lower – and where significant savings can be achieved through reduced or minimal, if any, use of private vehicles. 'Location efficient' areas are those in which residents are not dependent on cars for their daily activities and can walk (or cycle) to access both public transport and the majority of goods and services used in daily life. Clearly, then, TOD schemes would be considered 'location efficient' and residents could be considered to qualify for LEMs (Institute for Location Efficiency n.d.).

In the US, where there is now fairly extensive experience with LEM programmes, a mortgage bond applicant with a monthly income of \$2 100 would qualify for a bond of \$115 611 in a 'location efficient' area, compared to a bond of \$76 058 elsewhere, calculated at the standard bond repayment to income ratio of 28% (Blackman & Krupnick 2001). In South Africa, lending institutions generally do not allow a bond repayment to income ratio of more than 30%, and do not take the impact of transport costs on household budgets into account.⁴ It is possible, however, to model the savings in transport costs that potentially could accrue to a household through substituting travel by public transport (and walking or cycling) for acquisition and use of a car, and to project what this might then translate to in terms of additional mortgage bond finance within an LEM-type programme. Table 1 below summarises the results of such a modelling exercise for 'typical' households falling into two income bands within the 'affordable housing' market segment of the population (Marks 2006, pp.96-98).

While the model obviously could be refined and elaborated, even these necessarily crude preliminary calculations suggest that the establishment of an LEM-type programme which deploys some version of the 'affordability index' used in the US (see note 4) could significantly improve the standard of accommodation accessible to households in this segment of the market. Under present conditions in South African housing markets, this would substantially extend the potential downward 'reach' of private sector developers and represent an important and necessary 'demand-side' intervention to facilitate the provision of appropriate housing stock in 'efficient' locations. The essential precondition for such locations to qualify as 'efficient', however, is the existence of a public transport system able to serve effectively both the current and anticipated travel demand patterns of at least the 'PT-car aspirant' and 'PT-captive' segments (see note 3) of the resident population. Moreover, while fundamental, instituting an effective, city-wide public transport system constitutes just one of the 'supply-side' interventions required to facilitate 'location efficient development' in the form of TOD. The other major such intervention would be the establishment of an institutional framework encompassing relevant agencies in both the public and private sectors, and specifically geared to deliver the appropriate forms of development in suitably 'efficient' locations.

Given that such institutional innovation or change is likely to be highly context specific, the elaboration of the rather abstract and schematic framework required to facilitate TOD which has been sketched out above will be grounded in a 'first cut' assessment of the complex realities of implementing it in the Atlantis Corridor in metropolitan Cape Town. A rationale will be presented for situating the development of the model in this particular zone of the city.

Table 1: Potential impact of an LEM-type programme on the 'affordable housing market'

HOUSEHOLD A ('gap market') 2 adults, 2 children		HOUSEHOLD B ('lower middle income') 2 adults, 2 children	
Annualised cost of car ownership and use • 1300 cc vehicle, R30 000 purchase price • 20 000 km p.a. routine travel		Annualised cost of car ownership and use • 1600 cc vehicle, R125 000 purchase price • 20 000 km p.a. routine travel	
fixed costs	8 000	fixed costs	32 600
running costs	15 590	running costs	18 950
total	23 590	total	51 550
Annualised cost of public transport use • adults R172 p.m. train fares each • children nominal R50 p.m. each		Annualised cost of public transport use • adults R172 p.m. train fares each • children nominal R50 p.m. each	
adults	4 128	adults	4 128
children	1 200	children	1 200
total	5 328	total	5 328
Potential savings p.a.		Potential savings p.a.	
• car sold/not acquired (alt. a)	18 262	• car sold/not acquired (alt. a)	46 222
• car not used routinely (alt. b)	10 262	• car not used routinely (alt. b)	13 622
Potential additional bond finance (LEM)		Potential additional bond finance (LEM)	
• alternative a	152 180	• alternative a	385 180
• alternative b	85 510	• alternative b	113 510
Notes			
<ul style="list-style-type: none"> • vehicle fixed and running costs based on Automobile Association rates 2006 (assuming fuel cost R6.45/litre) • public transport costs based on 2003 NHTS data for average costs of travel to work by train • additional bond finance calculation based on assumption that repayment of R100 000 worth of bond finance is R1 000 p.m. 			

4. PROMOTING TRANSIT ORIENTED DEVELOPMENT IN METROPOLITAN CAPE TOWN: THE ATLANTIS CORRIDOR

4.1 Contextual background

The Atlantis Corridor (Figure 1) has experienced rapid 'greenfield' development over the last decade, primarily taking the form of conventional suburban residential development in car-oriented layouts with some light industrial development along Koeberg and Potsdam Roads south of the Diep River. Large scale retail and office development has occurred in the Century City complex adjacent to the N1 freeway, with more locally-oriented commercial development elsewhere confined to retail clusters or strips along Koeberg Road, Blaauwberg Road and Parklands Main Road. Overall, the pattern of development has been shaped largely by established exclusionary zoning practices and densities remain relatively low, although the more recently developed areas of Parklands have been planned to realise somewhat higher densities and more mixed land use patterns. Developable land in the Corridor within the designated urban edge could accommodate much of the anticipated growth of metropolitan Cape Town at relatively little direct environmental cost, provided that suitable density levels – and less car-oriented patterns of development – are achieved (Marks 2006).

The transport system serving the Corridor area is particularly problematic. Public transport provision is confined to unscheduled and unsubsidised minibus-taxi operations and limited subsidised bus services operating in general traffic streams primarily at peak periods, and therefore subject to high and rising levels of peak period congestion on the road network. The rail link to Atlantis remains restricted to freight movement and there is currently no

passenger rail service operating in the Corridor.⁵ Key sections of the road network are under severe stress with a number of peak period bottlenecks resulting in significant delays throughout the area, particularly for traffic directed at the city centre which is an important employment zone for a substantial proportion of Corridor residents. The major bottlenecks include the limited number of north-south routes crossing the Diep River, limited east-west connections to and across the N7, and the notoriously congested Koeberg Road and Marine Drive interchanges with the N1. During the morning and evening peak periods, commuters travelling between the Atlantis Corridor and the central city experience very long delays, with travel times for some rising to more than 1½ hours in each direction (City of Cape Town 2002).

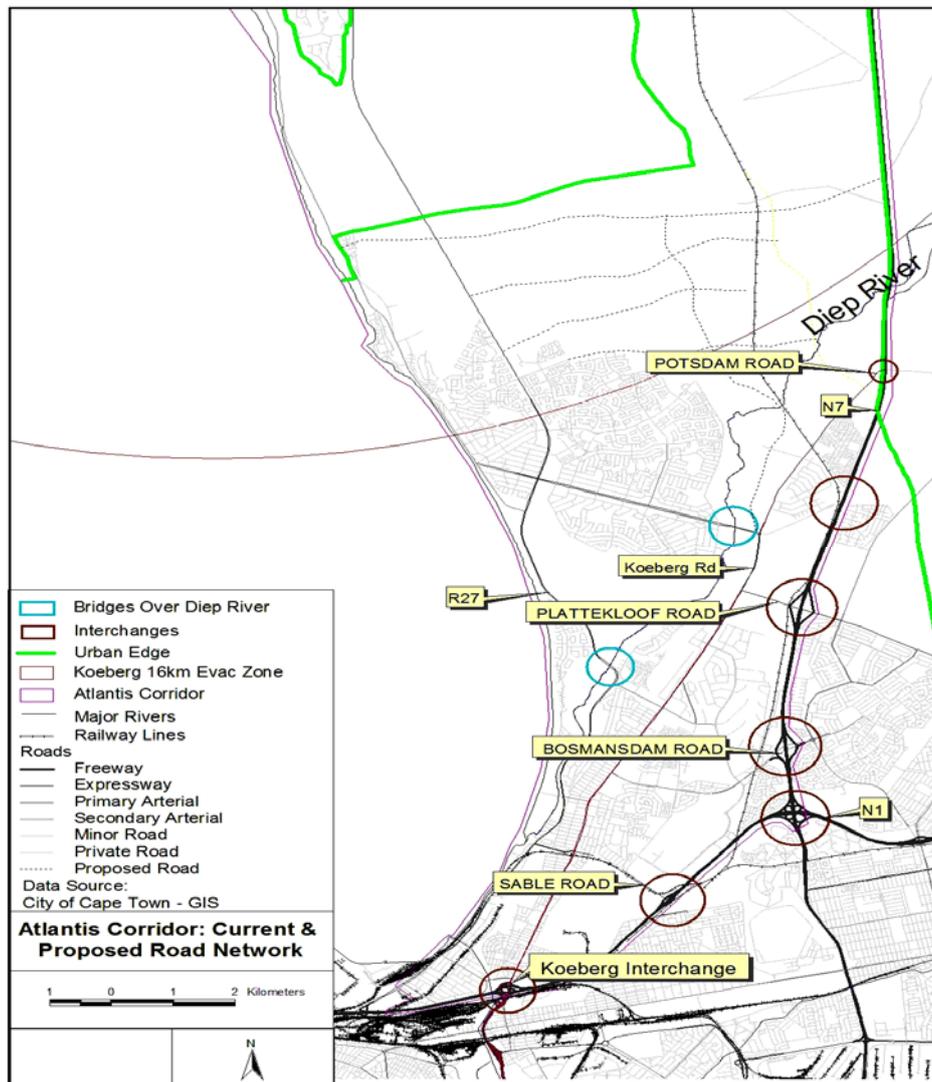


Figure 1: The Atlantis Corridor

Anecdotal evidence from private sector developers working within the Corridor points to a possible decline in demand for residential development aimed at higher income groups. Demand for commercial and industrial premises remains high, as does demand for accommodation for lower income earners. The suggestion by both developers and estate agents is that higher income earners are dissuaded from buying in the Corridor area if they have to travel outside it for work purposes, due to the congestion and extended travel times (Milnerton Estates 2006).

4.2 A potential 'window of opportunity' to introduce TOD in the Corridor?

There is little doubt that a significant proportion of the future 'greenfield' growth of metropolitan Cape Town will be absorbed in the Atlantis Corridor, as it is one of the few remaining areas of the city in which substantial amounts of developable land can be made available with environmental considerations limited to the form development would take rather than its direct impact on pre-existing natural conditions. The recent hiatus in development north of Table View was due primarily to the need to increase the capacity of wastewater treatment plants serving the area, on the one hand, and the need to resolve the issue of the evacuation plan required in terms of the operating licence conditions of the Koeberg nuclear power station north of Melkbosstrand, on the other. While development interest in the Corridor remains strong, the general slowdown in growth of the higher end of the middle income residential market suggests that it may be an opportune moment to promote forms of development which more effectively address the needs of households in the 'gap' or 'affordable housing market', at least those in its upper range. At the same time, pressure on the mortgage lending institutions to meet their obligations under the Financial Services Charter to assist the provision of affordable housing, would seem to provide a possible further impetus in this direction.

Provided that what seem to be its essential preconditions – the establishment of an effective public transport system and the institution of an LEM-type programme – can be met, TOD presents an obvious candidate as an appropriate form which development could take in the Corridor if advantage is to be taken of this particular 'window of opportunity'. Should a clear commitment to installing the requisite public transport system be given, its potential candidacy would be further enhanced by the possibility that, in the face of current congestion levels on the roads out of the area, this would make it easier to comply with the requirements of Koeberg evacuation planning without major additional investment in the road network serving general traffic.

The next section outlines some preliminary and as yet still tentative proposals for a framework to facilitate the implementation of TOD in the Atlantis Corridor area which, in principle, could serve as a model for such development under similar conditions elsewhere – which might be difficult to replicate fully, however.

4.3 A framework to facilitate TOD in the Atlantis Corridor

On the 'supply side', key interventions should be focused around encouraging private sector developers to undertake TOD. Of necessity, this requires that TOD is demonstrably at least as profitable as other forms of development – and perhaps even more so. Three aspects of this appear to be particularly important:⁶

- expediting approvals of TOD projects which meet specified requirements in order to reduce developers' holding costs due to delays, which can be very significant;
- providing some level of public sector security for the bridging or development finance needed to initiate TOD projects, which could reduce the costs of capital for developers; and
- adjusting land use management regimes to enable mixed use development – fundamental to the TOD concept – to diversify the risk borne by developers in the face of somewhat unpredictable dynamics in the various property sub-markets for residential, retail and office accommodation.

All of these suggest that there is a need to establish either a specialised agency to promote and facilitate the implementation of TOD projects – possibly at the local level – or an appropriate institutional framework within which policies and practices are introduced to achieve the same outcome by ensuring effective cooperation among relevant agencies

already established in the various spheres of government. There are undoubtedly complex issues to be considered in seeking to adjudicate between these possibilities, whose detailed exploration lies beyond the scope of this paper. A locally-based specialist TOD agency would undoubtedly offer benefits in terms of the sort of highly focused effort that would be required to pilot the innovative approach that has been proposed. Funding the costs of establishing it, however, as well as obvious questions to be posed about its alignment with existing agencies – and its relationship to any transport authority that might be created at the local level – would clearly remain to be resolved. On the other hand, the difficulties of securing support for the changes in established practices that would need to be brought about to facilitate TOD within the relevant network of existing agencies probably need no elaboration. Certainly, such changes would take time, and a considerable investment of competent political leadership or will, to institute.

On the ‘demand side’, as has already been indicated, the key intervention to be undertaken would be the introduction of an LEM-type programme to extend the level of bond financing accessible to households in the higher end of the ‘gap market’ upwards. This would need to be actively promoted among the major financial institutions – probably most effectively at the national level through a strategic alliance of the Departments of Housing and Transport – but obligations in relation to the Financial Services Charter would seem, *a priori*, to provide fertile ground in this regard. Of course, households in the targeted segment of the market are unlikely to make appropriate decisions not to acquire cars, or to reduce their use of them, unless an effective public transport system is in place to meet their routine travel needs, and this is obviously an essential precondition for the proposed approach to succeed. The prospect that at least part of such a system could be installed in the Atlantis Corridor seems good, given the current intolerable levels of congestion on the area’s road network, as well as the need to address Koeberg evacuation planning requirements. The timeframe for this remains moot, however, as it does for a more comprehensive transformation of the city’s public transport system as a whole. Proposals to establish contra-flow lanes for an express bus service from Blaauwberg Road along Otto du Plessis and Marine Drives to the central city and to install a high frequency busway along Koeberg Road have still to be confirmed publicly.

One exogenous factor that could affect the propensity of households to opt for more ‘transit-oriented’ lifestyles in the future would be dramatically rising fuel prices, possibly engendered by the onset of a global oil depletion scenario – but this remains somewhat imponderable at present. The validity and feasibility of the model proposed here for facilitating TOD should be tested against the likelihood and pertinence of the less catastrophic frame of reference for household decision-making that has been sketched in the preceding section.

5. CONCLUSION

While development of the model remains very preliminary and provisional, qualified support for a key aspect of its potential applicability – the establishment of an LEM-type programme – has been articulated by representatives of local private sector development and mortgage finance provision communities (Marks 2006). Justifiable concern was expressed that any such programme would remain ineffectual unless the major ‘supply-side’ interventions outlined earlier were implemented to lessen the potential risks of undertaking TOD from the developers’ perspective. The critically important requirement that high standard public transport services be effectively in place to enable the desired shift away from car-oriented travel and land use patterns also bears reiteration. There can be no TOD without its ‘transit’ component.

Quite evidently, further investigation remains to be carried out with regard to the appropriate institutional framework to facilitate TOD, not only in Cape Town's Atlantis Corridor, but also in other major South African cities. The possible advantages and disadvantages of the two very different approaches discussed above require detailed consideration and – perhaps even more importantly – intensive discussion with the public sector agencies whose roles might be affected by such an innovation.

Finally, it should be emphasised that the model put forward in this paper refers to just one of the possible situations in metropolitan Cape Town to which a TOD approach might be applied. Other possibilities – in particular, that associated with the 'retrofitting' of what would probably be largely public sector-driven TOD in the township environments of the metropolitan south-east sector – would undoubtedly take a quite different form. Recognition of this limitation suggests that ample space exists for further research in this arena, and that there may be a broader societal imperative to undertake it sooner rather than later.

6. NOTES

For most households, of course, the choice of a suburban 'lifestyle' was enabled not only by their access to affordable private transport, but also by access to affordable, sometimes publicly subsidised, mortgage finance, and by the reorganisation of the residential construction sector to supply suitable forms of housing on a mass scale, facilitated by appropriate land use regulatory frameworks. The public provision of the necessary road networks, including the development of urban freeway grids, was a further precondition of post-war suburbanisation (Hall 1988: Chapter 9, Knox 2005).

Other specifications of this band – sometimes referred to as the 'affordable housing market' – have been given as R3 500-R10 000/month (City of Cape Town 2006b) and R2 500-R7 500/month (Settlement Dynamics et al. 2006).

The car ownership level drops to 0.2 cars/household for households with incomes below R3 000/month (Cameron 2006). In the Department of Transport's current 'customer market segmentation' categories used for analytical and strategy formulation purposes, the 'PT-captive' segment is defined as "public transport passengers earning less than R2 500 per month", while the 'PT-car aspirant' segment is defined as "public transport passengers earning more than R4 000 per month" (Lombaard 2006).

One result is that, while households may appear able to cope with a given repayment rate, their transport costs in an 'inefficient' location – normally selected for its low raw land cost – may make such a purchase unaffordable. More rationally, the 'affordability index' should be calculated as the ratio (housing costs + transport costs) ÷ (income), where 'housing costs' would, of course, incorporate the cost of land (CoTOD&CNT 2006).

Proposals to double and electrify the Atlantis line for passenger service appear not to have received priority in SARCC's regional rail planning, although they remain an element of the City's recently published draft Public Transport Plan (City of Cape Town 2000a).

This section of the paper derives directly from Marks (2006), although a key aspect of the model presented there – the proposed establishment of a specialist TOD facilitation entity – has been significantly qualified here, as indicated subsequently.

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