URBAN DESIGN AND ENVIRONMENTAL MANAGEMENT IMPLICATIONS OF CORRIDORS

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ABSTRACT

Transport planning and access management forms an integral part in the planning and design of our cities. Although integrated planning has been around for a number of years, the question always arises who plans for whom and who integrates the planning.

The success of corridors and transport planning will only be attained if all the urban components and disciplines are included. Corridors as linear development is an urban form of development based on the idea that all major activities can be concentrated along a single linear configuration, which is usually centred on transportation access of some kind. It is believed that the predominance of car movement has negatively affected the sustainability of corridors because it is reliant on a single mode of transport.

It is clear that if transport planning is to assist in generating sustainable urban form, a balance needs to be created between mobility, accessibility and activities. Urban form and the spatial qualities are of utmost importance to create successful development corridors.

Without addressing urban form, land use movement and transport infrastructure and services, public amenities and urban conservation, an integrated approach is not possible. The management of the corridor should not only include access management, land use management or environmental management, but all three components should be integrated and interrelated. The implications of each of these should be identified, addressed and incorporated into the design guidelines.

Existing projects will be used to illustrate the concepts and urban design implications of the arguments.

1. INTRODUCTION

Transport planning and access management forms an integral part in the planning and design of our cities. Although integrated planning has been around for a number of years, the question always arises who plans for whom and who integrates the planning. The “chicken and egg” situation of land use planning versus transport engineering has been around for decades and will probably be with us for the next number of decades.

Although urban design is seen as a relatively "new" profession, it is in fact a very old profession. Historically, engineers have designed places like Paris but the approach was more than movement of traffic. When the planning professions started to specialise to the extent that single objectives were addressed, the separatist planning and cities with a low level of urbanity resulted. We are not talking so much of urban designers than of urbanists, i.e. professions who promote urbanism and environmental quality of life for city inhabitants. Any profession can strive towards urbanism. Transport planning can play a major role in attaining a level of urbanity if the approach to the environment and incorporation of urban design is actively perused.

Corridors or activity corridors or mobility corridors or activity spines are concepts that have been banded about for a number of years. Not only have they been included in planning documents and policy statements, but also in some respects planners are actively promoting them.

2. CORRIDORS: DEFINITIONS AND MUTATIONS

The policy, development and implementation office of the Development Planning Department of Gauteng, defines the Corridor as: "… track of land forming a passageway", which allows access from one area to another. As the planning concept corridors are mainly associated with linear development. Corridors as linear development is an urban form of development based on the idea that all major activities can be concentrated along a single linear configuration, which is usually centred on transportation access of some kind.

From an economic point of view, certain main elements or characteristics of corridors have been defined, (Urban-Econ) i.e.

- *Connectivity between major nodes*
  This implies a purposeful interaction between nodes and connectivity between the extremes of the proposed corridor. This key link will facilitate a much needed opening up of markets and establishment of proper access to job opportunities.
- *Density and continuity*
  The corridor relies on a minimum density of uses and should run through or generate high density of populations and economic activities.
- *Occupation of significant land uses*
  A wide range of significant land uses should be establishment, which can act as focal points along the routes to develop the so-called "string-on-a-bead" configuration. This implies that the land use should be mixed and designed in a symbiotic way. Catalytic projects and destination should be along the corridor.
- *Existence of multi-nodal transportation*
  To be successful a corridor development needs to provide a wide range of movement and transportation options. This will not only stimulate the use of public transport, but also allow for accessibility for a range of population and income groups.
- *Propensity of development*
  There must be a natural propensity for development to occur in the corridor. The increased accessibility and symbiotic relationship of different land uses should be managed in such a way that development along the extent of the corridor can be stimulated and managed over time. Market response needs to be such as we see the points on the corridor as worthwhile addresses and locations. Transportation and mixed use needs to be managed.
- *Absence of inhibitors*
  Economic as well as physical inhibitors can exist that may inhibit the development of a corridor. Access management and land use management can also inhibit the development of a corridor if the balance between mobility accessibility and activities is not addressed.
- *High level of accessibility and mobility*
  In order to stimulate growth and activities, it is important to get the balance between mobility and accessibility. The management of this potential conflict depends not so much on the figures generated in access management plans, but also the approach and kind of development and environmental objectives that the corridor needs to address.

The problem with the approach to corridor development lately is not so much the effort and planning concept, but the fact that the different disciplines has a completely different view of what the corridor is.

To the *economist***,** the corridor is a developmental tool to guide and stimulate development along accessibility based on a certain economic context.

To the *traffic engineer***,** the corridor is a problem. The problem being the balance between accessibility and mobility, since the traffic engineer's basic premise is to ensure safe and efficient movement of traffic.

To the *land use planner* the management of the land use changes is of vital importance. The pressure for higher land uses and the protection of the residential component has to be balanced. It is this balancing act that requires the development of design guidelines and environmental input.

For the *urban designer* the corridor is an opportunity to create an urban environmental, which is exciting, liveable and has an intensity and density of activities which can create the highest possible level of urbanity. Due to the energy created by the corridor the urban designer has a force that can be managed to create liveable and high quality environments due to the location and accessibility. The management of these forces are directly related to the environmental management process and tools.

Historically corridors are not a new concept or a planning approach. Corridors have been around for centuries. The development of a pathway or roadway or street into a development corridor or spine, is a natural progression relating to access, location and agglomeration, although accessibility is today mostly relating to private car movement.

It is believed that the predominance of car movement has negatively affected the sustainability of corridors because it is reliant on a single mode of transport. Areas that are highly accessible to motorcars in terms of location and access can quickly become inaccessible due to technology changes, congestion, alternative route planning and over-developed agglomeration.

Manifestations of corridors in Europe, Middle East Africa, America or South Africa are developed for different reasons and due to different factors. Each
of these contexts has its own rules based on the cultural response to the urban form and structure. Context and cultural requirements are integral parts of corridor planning. It is important that corridors are designed, not only as mobility for cars but also for the creation of special places in our cities.

3. MOBILITY, ACCESSIBILITY AND ACTIVITY

It is clear that if transport planning is to assist in generating sustainable urban form, a balance needs to be created between mobility, accessibility and activities. In order to obtain maximum mobility, access is usually limited, which will then create a certain activity response. In normal transport engineering terms, activity is seen as traffic generators, which need to be managed to ensure mobility by means of access management and road capacity. However, the intent of urban development is not so much managing cars, but to build cities for people which will also be using cars.

Access restriction and road capacity are the major driving forces in urban structuring (or “infrastructuring”). It is currently done in such a way that there are limited choices for the inhabitants and fewer options in terms of movement. Car orientated development does not enhance pedestrian movement and does not create the kind of densities of activities to warrant public transport.

The result is that the urban form created by the existing traffic planning approach creates low density, single use and car-orientated environments. If we look at the kind of environments that attract people (not people in cars, but people) it is clear that these environments do not 100% accommodate the car and all these aspects. Today the kind of urban form that is created is to be viewed from the car and not on foot. Not only does this low-density car orientated development create S L O A P (Space Left Over After Planning), but also unrelated developments, which are islands within a so-called green area. With the increased of the use of car, the city in the park becomes the city in the parking lot. If we look at the kind of urban form and environmental quality which people flock to, either foreign tourists or local tourists or local inhabitants, it is clear that these environments take much more into consideration other than the movement of the car. Some places can be designed with less desirable traffic movement but more activities. Congestion is not always undesirable. Mobility needs to be balanced with activities. This balance should relate to the specific application and role of the corridor. (See fig 1.) Access management and environmental design needs to be integrated.

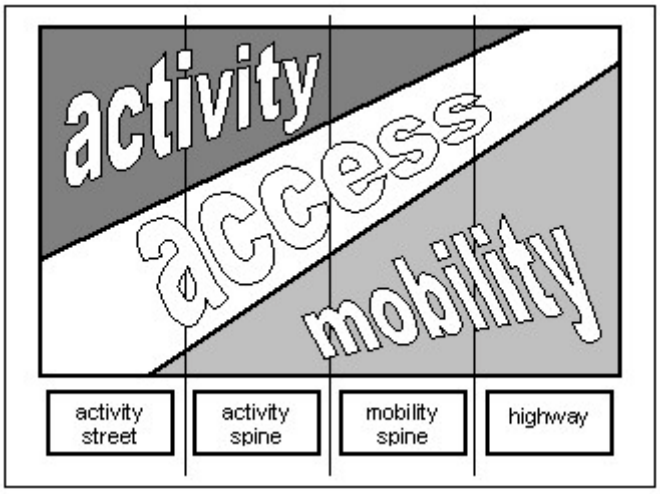

Figure 1. Relationship between Access, Mobility and Activity.

All planning professions currently use sustainability as the basis for future planning. The World Commission on Environment and Development (the Brundtland Commission) defined sustainable development as *"development that needs our present needs without compromising the ability of future generations to meet theirs."* Linked to that a new paradigm is currently developing where the car is being managed rather than being solely designed for. This has a number of implications for street design.

- *Permeable streets:* so that it is easy to walk to the area without long detours caused by car base layouts
- *Legible environments:* so that it is easy and pleasant to find your way around and everywhere does not look the same
- *The taming of the car:* so that the car does not dominate, yet we avoid the deserted pedestrianised environments which dominate many inner-city estates
- *Density and a mix of uses:* so that the distances are minimised and there are people to animate streets and support local services
- *Efficient public transport:* so that people can have the alternative choice of an efficient public transport system.

The vicious traffic generating cycle that increase car-related development has a lot of alternative sustainable principles that can be introduced to break the cycle (see fig 2.).
Transport engineers can make a huge difference if an integrated approach is followed.

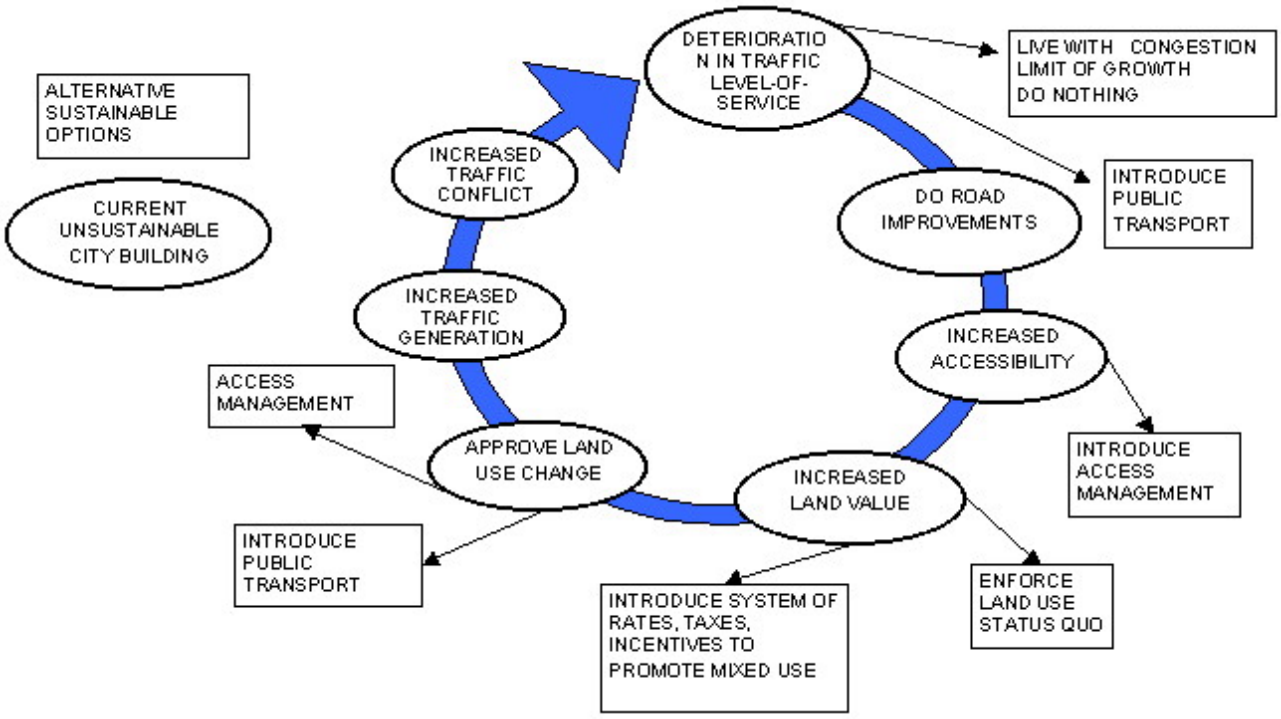

Figure 2. Vicious Traffic Cycle.

4. CORRIDORS AS LINKAGES

Linkages (corridors) can be designed as roads or as streets. "A linkage or contextual linkage is a physical or temporal relationship between two or more nodes of activity, usually implying a connecting structure" (Tate 1983 page 96). Linkages of this kind are most often thought of as physical connections and are exemplified by a preferred route, usually a street or public means of passage along which a particular activity or cognitive experience occurs.

The image potential of a path or linkage is closely linked to the path as a preferred route. Contextual linkages have the following qualities:

- A linear and/or axial relationship exists with the nodes or the urban structure
- It reinforces the dominant structure of the urban morphology like street intervals and blocks
- A contextual linkage establishes a continuation of the special activities or function of the node, or provides mutual beneficial functions which exists along the linkage and reinforces the nodes
- The linkage assists individual orientation and a sense of direction in the city. The views are experienced as coherent, orchestrated and defined
- The linkage should have a sense of permanence and should therefore be defined by adaptable buildings and use compatible with the nodes. It should have a certain latency in the environment
- The public façade acts as a vertical binding façade of the street in block interface, which is habitable and therefore linked to the human activities along the route
- The street frontages should contribute to the extension and subdivision of the urban space. The spatial definition of the public realm should be positive
- Movement as well as rest places should form part of the route. This ensures that human interaction along the route will create a more meaningful space than a pure visual fact.

Spatial quality of the street determines its identity as a linkage. For a street to be successful the elemental form of the street has a basic characteristic of volume, generated by the vertical plane of its edges and relationship between the functions on both sides of the edges.

Tate (1983) identified the following features, which determines the identity of linkages:

- Interface, spaces between street and building block
- Public façade or vertical façade of the edge
- Rhythmic and spatial progression
- Visual orientation and continuity.

If the *street* is limited to a *road*, its role as contextual linkage is limited. The contemporary image of the city, interpreted as a structure of solids within undefined space, produces an elemental street with very few characteristics of veld volume. The street is then reduced to a road. No spatial linkage can be achieved. Function of place and link has been separated. This represents reduction of the idea of street to the concept of road, which is marked out on the ground and becomes basically a two-dimensional plane or surface for the movement of traffic.

Since the outside of the buildings are the inside of the city, it is important that the street or corridor should not only ensure that space defining buildings are created, but that the other activities like pedestrians and other urban activities can be accommodated.

5. ENVIRONMENTAL MANAGEMENT, LAND USE MANAGEMENT AND ACCESS MANAGEMENT

In order to ensure that a balance between land use, traffic and environmental qualities is achieved, we should determine what is an ideal situation for each of these components.

5.1 An ideal land use situation

- Land uses are compatible with the residential character or manageable to be compatible
- Land use typologies fit within the block pattern, erf shape and orientation
- Land use typologies are compatible with the street character
- Land use conflict is absent
- Land use compliments the placement of buildings on site

5.2 An ideal traffic situation

- Land use is low traffic generators and is preferably supported by public transport
- Land use mainly utilises passing traffic and generates the minimum number of new vehicular trips.
- Land use is an off-peak traffic generator
- A limited number of access points from the major mobility roads is provided
- Maximum safety is achieved (as a combination of lane width, number of lanes, speed, road geometry and sufficient sight line distance)
- Traffic signal progression is ensured, i.e. the ability to drive from one end of the specific corridor to the other without having to stop
- Parking is provided off-street, preferably visible for the main arterial in front of the building

5.3 Ideal environmental quality

- Street space is attractive and elements within it contributes to the creation of a special place
- Development contributes to the imageability of the street and build on the precinct character
- The development ensures liveability for the residential component
- The development is pedestrian-friendly and has high spatial qualities
- Adequate public amenities of acceptable standards are provided for the development
- The development is visually acceptable, uncluttered, look-managed and is maintained
- The development ensures high legibility in terms of the role of the street plays in the urban structure

- Buildings are defined in the street space with most parking being provided at the back of the site.

To ensure acceptable environment for all, a balance and integrated approach is needed. It is clear from the above that there are clear conflicts between the different disciplines. In order to achieve a balanced planning, the uses of the framework for the development of major streets or corridors are proposed.

The following components form part of the framework:
- Policy statements for the different disciplines, development principles for form typologies creating a legible urban structure within the major street
- Components of the development structure consisting of precincts and nodes, contextualising the generic principles along the street.

5.4 Typical policy statements for a development along corridors or major streets

Land use policy statement: within the framework of appropriate access management land uses and zoning principles should promote compatibility with and preserve core residential areas and related to traffic generation.

Urban form policy statement: urban form should contribute to the creation of a special street. Development should take cognisance of the special character of each precinct.

Movement and transport policy statement: mobility, accessibility and road safety should be balanced. Public transport, pedestrian and cycles should be accommodated.

Infrastructure and services policy statement: cost of services, level of services and its potential impact on environmental quality should be balanced and integrated in the street design.

Public amenities: the street should be designed as a public space and all the needed public amenities should be provided based on the context and community needs.

Environmental quality and urban conservation policy statement: highest level of environmental quality should be strived for with existing quality being enhanced through the implementation of public and residential interfaces according to guidelines. As many trees as possible should be retained. Conservation with the buildings should be conserved and the current residential character of the core areas should be enhanced.

Apart from the policy statement it is important that the *urban structure and form typologies* of the different components along the corridor should each have *development principles***,** which should guide the further management of the corridor.

For each precinct or node a character statement, development intensity planning control design guide and access management should be developed.

Development principles should be developed for land uses, urban form, movement transport as well as environmental quality (see Fig 3).

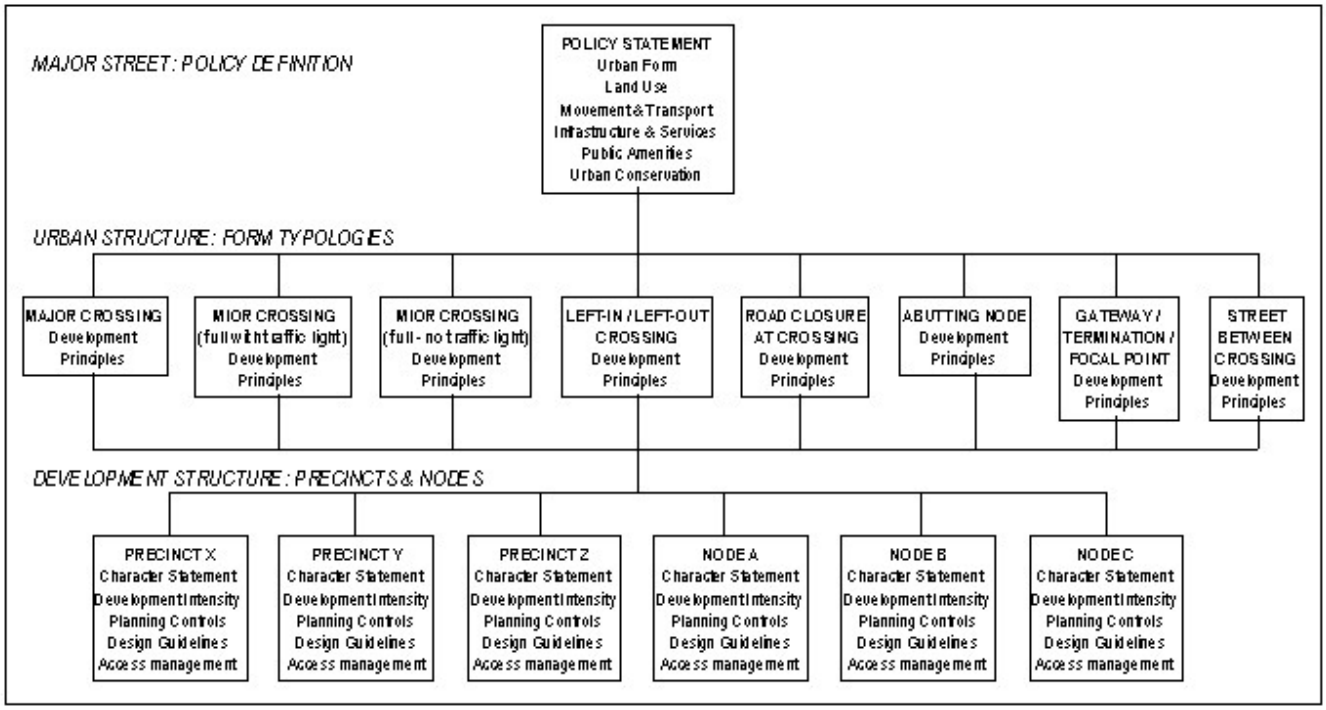

Figure 3. Model for the Management of Corridors.

6. ENVIRONMENTAL QUALITY AND IMPLEMENTATION OPTIONS

A suitable environment quality is a basic human right supported by principles as defined in the Development Facilitation Act. Environmental quality is, however, seen as subjective evaluation. "Acceptable should thus be defined through norms and values of the local community. Environmental quality has two components, i.e. implementation and maintenance.

In any major street or corridor, implementation of a high environmental quality should be achieved through the following:

- Public interventions. Physical actions of the local Council, i.e. road improvements and upgrading should be done in such a manner that the street is perceived as a public space with high quality finishes and image building elements. Environmental quality should be ensured through strategic physical interventions
- Private initiatives. Action by private developers should be managed in such a manner that the private developer contributes positively to the environmental quality of the public domain. Environmental quality should be encouraged through strategic policy interventions and urban design guidelines. The importance of maintenance in preserving a high environmental quality should, however, be stressed again. Options exist such as public maintenance or the encouragement of maintenance by private owners through incentives.

Performance criteria should be developed, which can guide the environmental and urban design guidelines. These should be linked to the access management plan as well as the land use plan. Design guidelines. Design guidelines give an indication of how a design should be in order to comply with the performance criteria.

Guidelines can be one of the following:

- Street interface guidelines
- Residential interface guidelines
- Site development guidelines
- Architectural guidelines (see Fig 4)

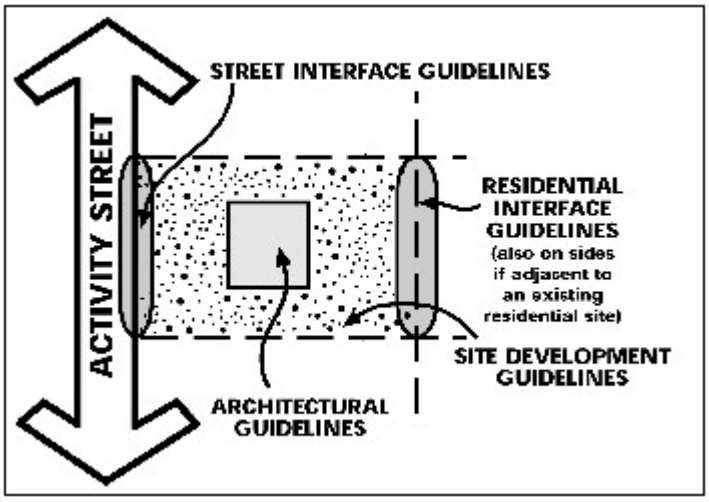

Figure 4. Urban Design Guidelines in relation to the Erf.

In order to manage the private response to the opportunities of the corridor, the street interface should guide the built form and also the activities that will be generated by the increased access.

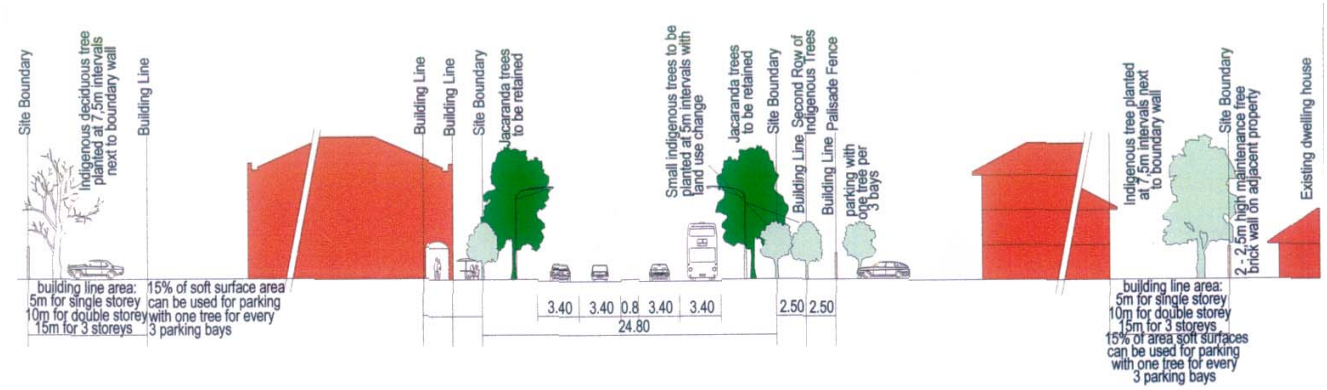

Figure 5. Example of Urban Design Guidelines for a Corridor Development.

7. CONCLUSION

From the above it is clear that although corridors and activity spines have been incorporated into the planning approach recently, the interdisciplinary and form-giving aspects of corridors have had little or no attention.

Without addressing urban form, land use movement and transport infrastructure and services, public amenities and urban conservation, an integrated approach is not possible. The management of the corridor should not only relate to access management, land use management or environmental management, but all three components should be integrated and interrelated. The implications of each of these should be identified, addressed and incorporated into the design guidelines.

Urban design and environmental management is thus not an add-on or beautification of predetermined transport planning. It can add value to an integrated planning process and ensure that access management, land use management and environmental management works towards the creation of liveable cities.

Corridors and activity spines have been in existence for centuries and is an integral part of the city building process. However, of late with the car- orientated society, we seem not to be able to integrate the technology into the city building process.

We should avoid implementing infrastructure rather than an urban structure. If we address corridors and movement as an integral part of city life, we can enrich our activity spines, corridors or other movement patterns to be more than simply the movement of people in cars, but the movement of people with cars and people without cars.

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