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A model for the densification of an inner city suburb : a case study of Jeppestown, Johannesburg

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Jeppestown Study Area and Surrounding Suburbs

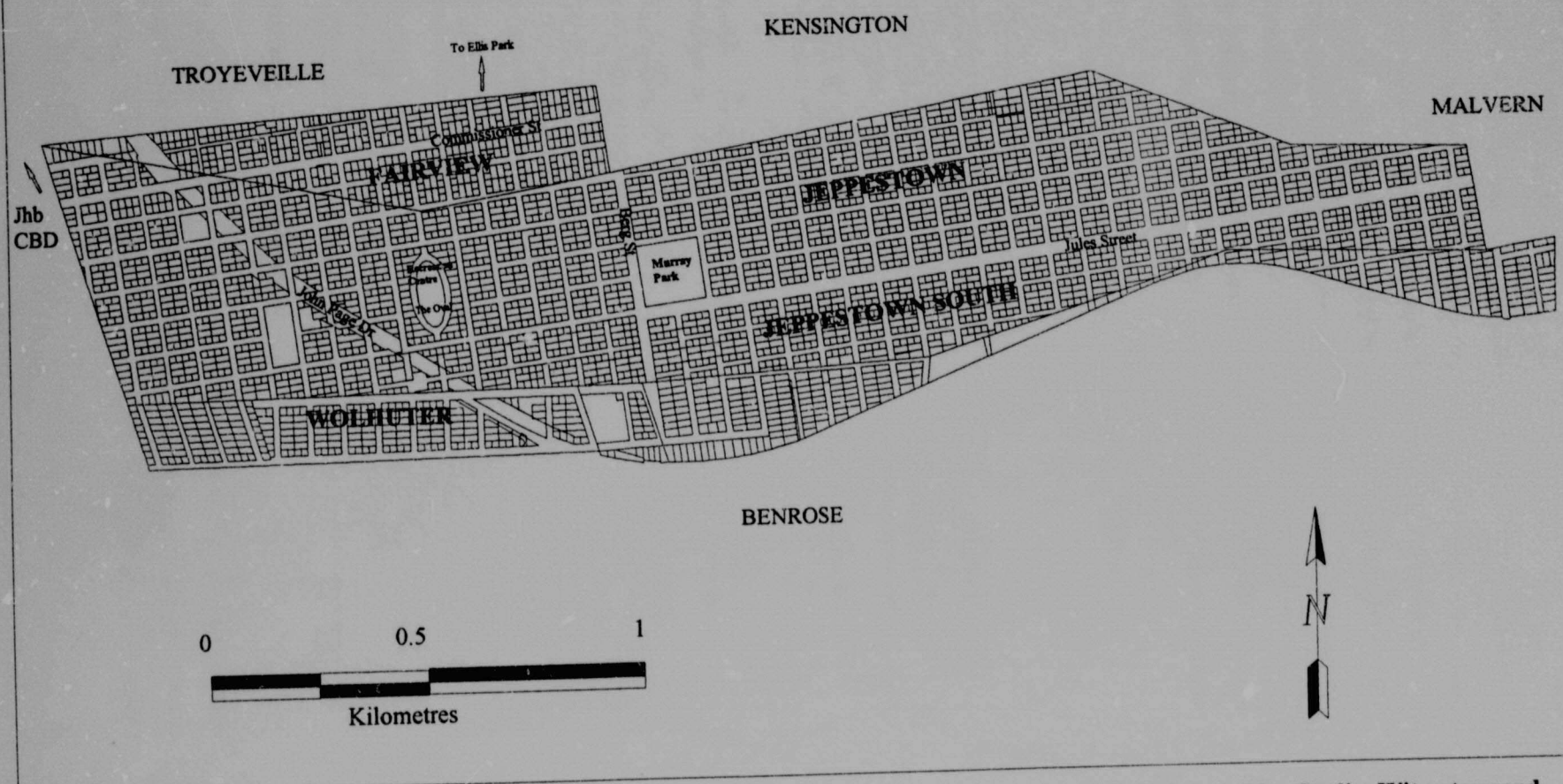


Figure 1.2: Jeppestown and Surrounding Suburbs (Sources: Base map from Johannesburg City Council; Labels from Map Studio: Witwatersrand Street Guide)

In choosing an appropriate suburb to densify in Johannesburg, areas suited to densification should be close to work opportunities and urban facilities, be affordable, have spare infrastructure and service capacity, contain a rapidly growing population and contain infill sites and/or redevelopment sites (Table 1.1). All of the above-mentioned criteria for potential infill land and land for redevelopment were used in the selection of an inner city suburb to densify. A number of Johannesburg suburbs met or partially met these criteria: Kensington, Malvern, Bertrams, Judith's Paarl and even Houghton were considered before Jeppestown was chosen. These suburbs, however, were not considered to be as suitable as Jeppestown.

Table 1.1: Factors Affecting Infill Potential

FACTORS	HIGHEST POTENTIAL	LOWEST POTENTIAL
Growth	Rapidly growing population; extensive demand for new housing	No population growth; limited new household formation
Employment centres	Strong CBD and local employment nodes; long commuting distances from the urban fringe.	Weak CBD; dispersed employment centres; short commutes from the fringe to jobs
Building Conditions	Extensive investment (public and private) in neighbourhood preservation and upgrading	Little investment in existing building stock or public facilities
Resident Incomes	Infill land located in a variety of neighbourhoods serving many income groups	Infill land concentrated in low-income neighbourhoods
Land Prices	Shallow land price gradient from urban fringe to inner city or significant density differences to balance steep gradient	Steep land price gradient from urban fringe to inner city and little variation in land use densities.
Growth Controls	Limits on outward spread of development operating regionwide	No growth guidance or coordination among jurisdications
Availability and Cost of Services	Developers at the fringe pay cost of service extension and assist with school and park requirements	Little in the way of impact fees charged

(Source: Real Estate Research Corporation, 1982)

The more affluent suburb of Houghton was rejected on the grounds that it would not meet the objective of accommodating lower income residents as property prices, on average, are at least 6 times higher than those of Jeppestown. Besides the issue of affordability, Houghton

was also not considered to be a politically viable area for densification due to the high degree of resistance that was likely to result from the wealthy residents. Also, Houghton could easily be down-graded if lower-income groups are allowed to reside in the suburb.

Kensington is known to have a lower percentage of home rental than Jeppestown which would cause it to be not as suitable to new-comers who are initially likely to prefer to rent than buy residential property. Kensington does also not serve as such an 'entry point' for new-comers to Johannesburg due to higher property prices (they are approximately double that of Jeppestown) as a result of the upgrading of the area. Property prices in Jeppestown have remained low due to the intrusion of industries since 1911 which caused the outmigration of the elite into more attractive suburbs such as Parktown (Hart, 1976).

Although Malvern is similar to Jeppestown in respect of its socio-economic profile (CSIR, 1994a), this suburb was not considered to be the most suitable area as it is situated further from the inner city of Johannesburg than Jeppestown (Figure 1.2). Field inspection also revealed that there are fewer residential buildings suitable for demolition and redevelopment than Jeppestown, and also fewer vacant stands. Although Judith's Paarl and Bertrams are also situated fairly close to work opportunities and urban facilities (Figure 1.2), they were not considered as suitable areas for the study as they are too small to make a significant contribution to providing additional housing. After a careful process of elimination, Jeppestown was chosen as the study area as it best satisfied the criteria that were identified as important when choosing land to densify for lower income residents. Below is a summary of the most important reasons for choosing Jeppestown as an area suitable for possible densification:

- The Jeppestown area is suitable for accommodating lower income residents. It is currently inhabited by lower income groups similar in socio-economic profile to those who are in need of accessible, affordable housing.
- The Jeppestown area is situated fairly close to work opportunities (approximately 3 kilometres) with excellent infrastructure and access (Figure 1.2). The main traffic routes through Jeppestown are Commissioner Street, which provides access to Kensington, Jan Smuts Airport and the East Rand; Jules Street, which provides access to Malvern,

Germiston and the East Rand. It also has two railway stations (George Goch and Jeppe Station) which provide access to the city centre. Bus stops are found at regular intervals - every 800 metres. The infrastructure is thus able to cope with an increase in population.

- It is situated close to Ellis Park sports stadium, Murray Park and its swimming pool, Rhodes Park and the Berth Solomon Recreation Centre which is found in the heart of Jeppestown at The Oval. This is important as these costly facilities are already provided and vast amounts of vacant land in Jeppestown will not have to be set aside for recreational facilities if densities are increased.
- There are many old and derelict buildings which have the potential to be demolished and rebuilt. Jeppestown exhibits many of the characteristics of the Inner City Syndrome, noted by Aldous (1988) such as poor housing, gap sites, derelict land, vandalism and graffiti, high unemployment and low earnings.
- There are small parcels of vacant land which can be used for infill development.
- Jeppestown is an 'entry point' for new-comers to Johannesburg due to the relative affordability of accommodation and cheap home rental. Crankshaw (1994) however notes that rents in the inner city are not low enough to provide housing for the homeless. Subsidised rental housing will be necessary in such cases.
- There is sufficient sewage capacity in the Goudkoppies Catchment within which the study area falls, to sustain an additional 600 000 people. Road utilisation is 60 percent of capacity or less. There is however, no spare water capacity (Johannesburg City Council, 1993).
- Jeppestown is of sufficient size to be able include a range of densification options. The total area of the study area is 202 hectares.
- Jeppestown is fairly flat (less than 6 degrees) and is situated on shales and quartzites of the Witwatersrand Supergroup (Johannesburg City Council, 1995). The area is not affected by dolomite, as is much of the rest of Johannesburg, which would influence the safety and cost of urban development. Jeppestown is also not affected by shallow undermining which would be a limiting factor to urban development due to the instability of the substrata. Parts of Jeppestown, though, have a moderate problem with collapsible and erodable soil (Johannesburg City Council, 1995).

Having looked at the physical structure and socio-economic aspects of Jeppestown, an overview of the historic factors that influenced the spatial patterns of residential development in Jeppestown is undertaken.

Factors Influencing Spatial Patterns of Residential Development in Jeppestown

Historically, spatial patterns of residential development which arose in the Johannesburg metropolitan area were predominantly governed by the occurrence of the gold bearing reefs. The east-west direction of the mining belt determined the major direction of residential growth. The introduction of horse trams in 1891, which were the first public transport system in Johannesburg, served to extend the direction of growth from Auckland Park in the west to Jeppestown in the east (Hart, 1984). This explains the current direction of major transport routes in Jeppestown.

Lack of zoning regulations were a factor influencing the distribution of residential land in Jeppestown. The discovery of gold resulted in the establishment of two mining camps: one in the west (Fordsburg) and one in the east (Jeppestown). The mining camp in the west contained shanties, shacks and mud-built cottages and was planned for the labourers. In 1889 Jeppestown was laid out on the eastern side and became an attractive residential suburb for the wealthier class. It became the first social and fashionable suburb of Johannesburg. The Jeppe family were among the early landowners and developers who had acquired two large pieces of land in Jeppestown (Johannesburg City Council, 1966; Smith, 1986). The Ford and Jeppe company had these pieces of land surveyed as residential suburbs. In 1893 plans for 158 houses were passed and by 1898 over 700 houses had been built. At this stage, there was no zoning so plots could be used for residential or commercial purposes. By 1918 most of Jeppestown was built up - public grounds had been laid out such as the Oval (Johannesburg City Council, 1968).

The construction of the railway in Jeppestown, encouraged further expansion in the east. It attracted the middle class to Jeppestown, which influenced the size of houses in the area and saw the development of a number of small houses in Jeppestown South. The eastern part of Jeppestown, however, was known as Belgravia and became a select residential suburb with

large properties and tree-lined avenues. Legislation enforced that no commercial premises were allowed to be constructed. When the City's Town Planning Scheme was promulgated in 1946 it was decided that the area west of the railway line be zoned for non-residential purposes. Business rights were permitted along Jules, Main and Commissioner Streets (Johannesburg City Council, 1968).

Besides the location of the mining activities, the east-west orientation of the ridges and rail and road transport routes, housing shortages have also influenced residential densities in Jeppestown. The housing shortage after the Second World War aggravated overcrowding, promoting urban decay. In the 1950's Jeppestown was showing signs of urban blight as many houses were now more than fifty years old and needed to be upgraded or demolished and replaced. This was particularly noticeable in areas adjacent to the railway line, such as Jeppestown South (Johannesburg City Council, 1968).

Slum clearance has formed a large part of Jeppestown's history. As far back as the 1930s, slum clearance had occurred in the inner city areas of Johannesburg (Parnell, 1988a), Intervention by planning authorities in the 1950s occurred as a result of the deterioration of the physical environment. A number of socio-economic surveys were conducted in the 1950's and 1960s, which eventually led to the development of a number of Structure Plans for the area. In 1956 a socio-economic survey led to the replacement of about 250 houses with 256 flats and terraced units. This was the first time that residential densities were increased through the direct intervention of planning authorities (Johannesburg City Council, 1956). In 1963, a slum survey was conducted by the City Health Department to assess the extent of deterioration in Jeppestown and whether an urban renewal programme should begin in the area. The results of the survey showed that the area was ripe for renewal. In 1965 another socio-economic survey was conducted. The results once again emphasised the problems in the area and helped to establish the causes of blight and the types of families living in Jeppestown and their rehousing requirements (Johannesburg City Council, 1966). In 1968 the Jeppe/Fairview/Troyeville Pilot Scheme was approved. The following principles were accepted: a) the area be retained for predominantly residential purposes; b) the removal of slum, outdated and sub-standard properties; c) the removal and relocation of non-

conforming uses; d) the removal and relocation of non-white race groups (Johannesburg City Council, 1968).

The popular professional conception is that, largely as a result of the downgrading of Jeppestown, many wealthier residents moved out of the suburb to neighbouring suburbs such as Kensington, resulting in low land and improvement values. Jeppestown has therefore become an affordable area for lower income groups and consequently cost-effective housing is presently under construction in Jeppestown. Apartheid legislation has contributed towards the high degree of rental in Jeppestown and the consequent high occupancies.

At present, residential densities in Jeppestown resemble a mixture of high and low densities. Jeppestown and Fairview comprise a mixture of detached and semi-detached houses interspersed with low and medium-rise apartment blocks. These older flats provide housing relief for many poor blacks, most of whom lived previously in hostels, domestic servants rooms, backyard shacks and shanty towns. However, with parts of Jeppestown undergoing a transition from residential to commercial land use, many poor blacks have secured accommodation destined for demolition. Demolition in Jeppestown has resulted in many vacant lots and incomplete buildings which are frequently occupied by homeless groups (Crankshaw and White, 1992).

The current form of residential development in Jeppestown shows that there is a strong move in Jeppestown towards higher residential densities and that this process needs to be managed in a manner that will keep in tension the benefits of accommodating additional people, achieving a satisfactory living environment and ensuring affordable costs.

ORGANISATION OF STUDY

A review of the relevant literature relating to residential densities is contained in chapters 2 and 3. Chapter 2 looks at the historical, physical and social influences on residential densities, internationally and in South Africa. Chapter 3 firstly outlines the implications (advantages and disadvantages) of higher residential densities so as to inform the decision as to appropriate densities and housing types to be used in the case study of Jeppestown.

Secondly, chapter 3 presents the different opportunities for achieving higher residential densities, useful in the development of the model. Chapter 4 describes a methodology that may be used in order to increase residential densities in Jeppestown. Chapter 5 outlines key conclusions.

CHAPTER 2: LOCAL AND INTERNATIONAL FACTORS AFFECTING RESIDENTIAL DENSITIES

HISTORICAL INFLUENCES ON RESIDENTIAL DENSITIES

Since the turn of the century, a number of events have influenced the debate over desirable residential densities. Two opposing views on appropriate residential density have emerged: one view advocating low density as an optimum, and another view promoting higher residential densities and more compact cities. Proponents of this second view hold that an urban system which is compact in its spatial extent serves to maximise opportunity, choice and efficiency. It is advocated that the intense development patterns characteristic of the compact city will assist in limiting the horizontal sprawl of the city. The view is also held that a compact urban system can assist in redressing spatial and structural inequalities, such as the great imbalances in the spatial structure of South African cities created by colonial and apartheid structures. In South Africa, planning ideas are currently strongly focused on the compact city ideal.

The literature survey provided below aims to draw on international and local experience on densification and related aspects, in order to comprehend the dynamics involved in the densification process. An historical understanding of densification is important for an understanding of present densification trends in Jeppestown. In order to address these aims, this chapter is divided into three sections: the first section deals with broad international densification trends, the second with physical and social factors affecting the structure of the city, and the third, with trends and influences on urban density in South Africa.

The Industrial Revolution was one of the events which led to increased urbanisation, resulting in the concentration of people in towns. Agricultural machinery made many workers redundant on the farms which freed the workers to take up other employment in the towns. Another consequence of the industrial revolution was the shift from cottage industries to factory production which created the need for mass labour forces in certain towns. This in turn created the need for mass housing in walking distance of the factories. Residential areas with higher building and population densities therefore developed near the industrial factories (Mumford, 1961). In Britain, during the Industrial Revolution, there was

no overall municipal planning, and as a result, the most precious central portions of the city consisted of freight and marshalling yards (Mumford, 1961). Higher population and building densities therefore developed near the industrial centres and railway lines. Many 5-storey walk-up flats were built in Britain from 1880 onwards. In many European cities after the Industrial Revolution, most of the middle and working class lived at fairly high densities so that they could be within walking distance of their work opportunities. Also, during this period many people lived above their place of work. The need to be close to work opportunities was therefore a major factor influencing residential densities, since the greater the distance between home and work opportunities, the greater the transport costs incurred. In South Africa, segregationist laws have interfered with this natural process of employees seeking to live as close as possible to work opportunities. The majority of the labour force therefore lives far from work opportunities, resulting in increased transport costs to commuters (Behrens and Watson, 1992; Christopher, 1992; Maylam, 1995; Pirie, 1987).

Changes in technology also promoted the growth of many towns. Railroad and steamboat technology gave cities a long reach to their hinterlands to obtain raw materials and agricultural products, thereby increasing the city's manufacturing and commercial base. The result was an increased concentration of people in the cities. Two other technologies which contributed towards higher urban densities were the elevator and steel frame construction. Together they made the skyscraper economically and structurally possible (Levy, 1991). In Latin America, the use of flat reinforced concrete roofs, allow for the vertical extension on the existing roof. Consequently, Latin America contains high levels of urban compaction (Arrigone, 1995).

The issues of housing affordability, distances to work opportunities and overcrowded conditions influenced thinkers in urban planning theory. The British Garden City, pioneered by Ebenezer Howard (1850-1928), one of the most influential thinkers in British urban planning theory, proved to be a "powerful influence of international significance ... in that it set in motion a century-long trend [in planning]" (Cherry, 1988, 4). The importance of Howard's Garden City concept was that he popularised the idea of 'one house one plot', the private garden and access to green open spaces, which had been absent in the Victorian city. Howard's ideas set in motion an inevitable trend towards lower densities. His influence was

not only in England, with the initial establishment of two garden cities and a number of new towns, but also a strong international movement. He advocated decentralisation of people and jobs to new towns beyond reserved greenbelts, away from the crowded nineteenth century city. Howard sought to solve the problems associated with high urban density as he argued that the new type of settlement, or Garden City, would combine all of the advantages of the town (accessibility) and the country (the environment) (Hall, 1974). Howard believed that this would lead to falling land values in the inner city of London, thus allowing it to be replanned at lower densities. It should be noted, however, that this has not happened in London (Sudjic, 1992) which shows that urban planning theory and practice have not always gone hand-in-hand. London has continued to grow despite decentralisation policies.

Howard's urban model in the form of an ideal town, was influenced by the ideas circulating in later Victorian Britain. By the late nineteenth century, the urban poor were living in overcrowded conditions in inner London, mainly due to a shortage of housing. Many houses were divided up for subletting, which exacerbated overcrowding. A constant theme in the literature of this period is the problem of working-class housing: its physical and sanitary conditions (Cherry, 1988; Mumford, 1961). Overcrowding and residential densities emerged as major concerns. In the British census of 1901, the figures showed that 16 percent of the population of London were living in overcrowded conditions, with the official definition of 'overcrowded conditions' being defined as more than two persons per room (Cherry, 1988, 54). In tackling overcrowding Howard was not explicitly endorsing urban sprawl. He proposed that the towns would be fairly small - about 30 000 people - and they would be surrounded by a greenbelt (Howard, 1970). He therefore proposed a city limited from the beginning in numbers, in density of habitation and in area. It is important to note that Howard's Garden City was not a loose indefinite sprawl with immense open spaces, but a compact, confined urban grouping (Mumford, 1961). This is evident by the use of greenbelts to limit the physical spread of the city from within, as well as fairly high residential densities for the new towns: approximately 15 houses per acre or approximately 70-100 people per acre (Hall, 1974). This translates to approximately 175-250 people per hectare (pph) which is much higher than current densities of 99 pph in Jeppestown.

In 1912 Unwin and Parker, followers of Howard, published a very influential pamphlet 'Nothing Gained by Overcrowding'. Unwin argued for lower residential densities of about 12 houses to the acre (approximately 96 pph, assuming an occupancy ratio of 3.2). According to Hall (1974, 55), he argued that "the need for public space...was related to the numbers of people, so that the saving in land from higher urban densities was largely illusory". The standard of 12 houses per acre was accepted in 1918 and was used in the planning of most public housing schemes in the 1920s and 1930s (Hall, 1974).

Across the Atlantic, Frank Lloyd Wright, one of the most influential thinkers in American planning in the 1930s, proposed a "completely dispersed - though planned - low-density urban spread, which he called the 'Broadacre City'" (Hall, 1974, 76). Each home would be surrounded by an acre of land to allow each family to grow food for its own consumption. While Wright's ideas were similar to Howard's with regard to low densities and access to green open spaces, they differed in that Howard had proposed a compact, confined urban grouping. Lloyd Wright's concepts were in direct contrast to the ideas of the French architect Le Corbusier.

The Swiss born architect and planner, Le Corbusier advocated a break with traditional architecture in favour of the basic principle of functionalism. He believed that a strong community and social life could be obtained through the sharing of building and grounds (Coleman, 1985). He advocated high residential densities in the city centres through the use of skyscrapers, which would allow 95 percent of the site to be devoted to landscaping. His ideas are contained in two books: The City of Tomorrow (1922) and The Radiant City (1933). Le Corbusier advocated virtually equal densities all over the city to reduce the pressure on the central business area and thereby decrease congestion. Le Corbusier argued that this new urban form would result in a more efficient transportation system (Hall, 1974).

The ideas of Howard and Le Corbusier were adopted in the United States of America (USA) from the 1920s. However, in Britain, Howard's ideas in the form of the new towns, dominated over Le Corbusier's. For many cities, especially cities of the developing world, garden city ideas were implemented as a result of colonialism. Garden city ideas, for example, were brought to New Delhi in India, as shown by broad roads, extensive tree-

planting and low residential densities. In some parts of New Delhi, residential densities are less than 20 people per acre (approximately 50 pph). The residential section consists of spacious, one-storey bungalows situated on large residential plots: 0.8-1.6 hectare compounds (King, 1976). Colonial urban development in India was therefore characterised by low-density low-rise developments, which was in contrast to previous indigenous urban traditions. Back in England, the New Towns Act of 1946 was a further triumph of the Garden City movement (Coleman, 1985). Semi-detached dwellings remained the preferred option. While Le Corbusier's ideas about density have seldom been applied anywhere in the extreme form that he advocated, his ideas were very influential for a whole generation of planners after the Second World War (Hall, 1974). European urban planning was greatly influenced by Le Corbusier where densities of 1 000 people per net residential acre (approximately 2 500 pph) were achieved. Blocks of flats of 4-6 storeys have remained an acceptable form of accommodation in Europe to this day. During the late 1950s and 1960s, a number of slum clearance and urban renewal schemes incorporated skyscrapers in Britain (Hall, 1974). Le Corbuser's ideas have not been influential on South African cities. While Hillbrow in Johannesburg is characterised by high-rise residential buildings, at a density of approximately 700 pph (Urban Foundation, 1988), it is not planned with vast amounts of open spaces around the buildings as Le Corbusier had proposed.

The ideas of the Howard and Le Corbusier both drew together the strands of the modernist movement, characterised by rationality, functionality and efficiency (Harvey, 1989, Coleman, 1985). In her book 'The Death and Life of Great American Cities', Jacobs (1962) rejected the above-mentioned utopian views on the basis of their simplicity in that both were based upon intuitive beliefs and prejudices, rather than on scientific principles. She insisted on "the need to observe the facts and to discard theories" (Coleman, 1985, 9). Jacobs argued that the highly planned utopian visions would tend to isolate people into uniform suburban environments which would lessen their urban experience. Jacobs therefore called for a 'revitalisation' of the city through medium-rise high density forms. In contrast to the low and high density utopias, which emphasised a separation of land uses, Jacobs argued for a mixture of land uses. She therefore argued for greater diversity within cities, and has consequently been described as a critic of modernity (Coleman, 1985).

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