CHAPTER ELEVEN: CASE STUDIES

The previous chapter conveyed the results of structured interviews with planning professionals. These interviews provided a perspective on the opinions and experiences related to low-cost residential development from a consultancy perspective.

Chapter 11 will aim to briefly discuss low-cost housing projects and strategies in practice which have all led to important lessons learnt in the provision of sustainable human settlements through low-cost housing development. These projects include:

- Cosmo City in Gauteng which is commonly seen as the largest influence on the construction of the Breaking New Ground Initiative and thus as a turning point in housing delivery.
- Olievenhoutbosch in Gauteng which was developed with Breaking New Ground objectives as development guidelines.
- The N2 Gateway Project in the Western Cape which was developed as a measure to the Breaking New Ground Initiative.
- The Ethekwini Municipal Study which suggests design interventions which may improve the housing products delivered.

(The Rose Valley case study is captured in Chapter 12. Rose Valley is still in its planning phase and thus provides examples of how planning, management and design recommendations, based on the findings of the theoretical, empirical and best-practice principles identified in the various case studies, can be implemented.)

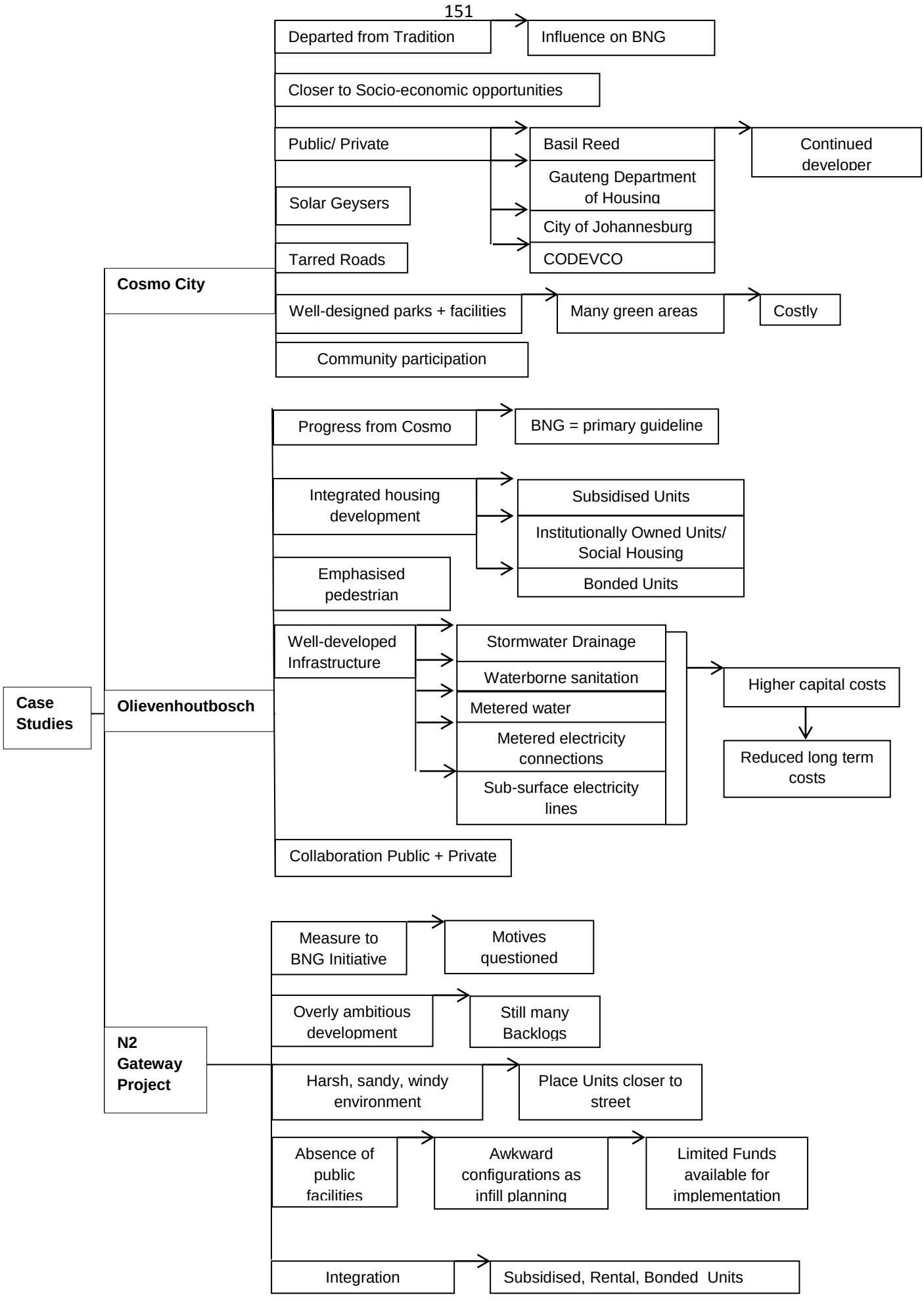

Figure 36: Summary of Chapter 10: Case Studies

Source: Own construction

11.1 Cosmo City

According to Basil Read Developers (2010), Cosmo City was initiated out of a need to accommodate the informal settlers of Zevenfontein and Riverbend, These settlers were illegally occupying privately owned land 25 km North West of the Johannesburg CBD and thus Cosmo City was established, as illustrated by figure 37.

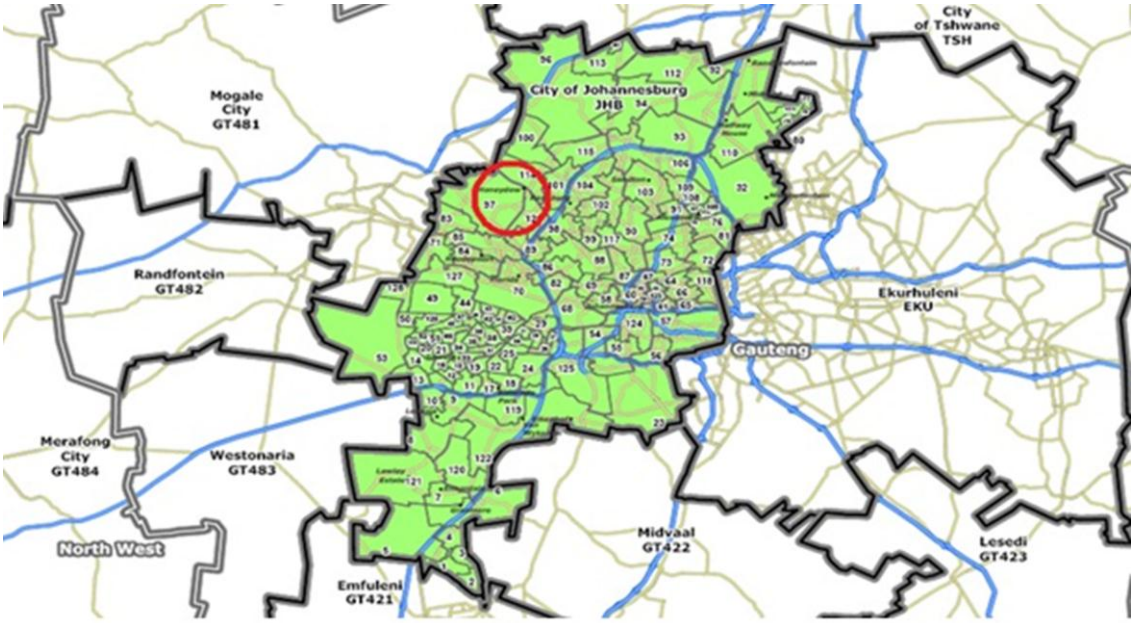

Figure 37: Cosmo City location

Source: Municipal Demarcation Board (2011a)

The goal of the project was to provide an integrated, mixed use and inclusionary housing development which would integrate families from different income groups in a sustainable settlement. Cosmo City was a departure from the tradition of providing low-cost housing on the urban periphery away from employment opportunities and social amenities (Basil Read Developers 2010). Kgowedi (2008) states that Cosmo City has successfully become a viable, liveable town for people from widely varying financial, cultural and social backgrounds. Note should be made of the importance of locating low-cost housing development close to socio-economic and cultural amenities, to which the poor need greater ease of access than the wealthy.

The project was initiated in 2000 and final approval was granted in 2004. PDG (2011:1) states that a Land Availability Agreement was signed between the City of Johannesburg and CODEVCO in 2000. The project was however delayed for four years due to objections from surrounding land owners. According to PDG (2011:1) service installation began in January 2005.

PDG (2011:1) states that CODEVCO, as a joint venture between Basil Read Developers and Kopano Ke Matla, was appointment to act as the City of Johannesburg's agent to undertake development in Cosmo City as a public/private partnership. CODEVCO followed a model which allowed for the provision of overall planning for the project and then supplied serviced or un-serviced land to other developers who would provide internal services, build top structures and institutional and commercial uses according to applicable zonings. The social and aesthetic qualities present in Cosmo City today can be directly attributed to the simultaneous investments made by both the public and private sector (Urban Dynamics, 2010).

The Cosmo City population is estimated at 70 000, proving that decent planning and efficient project management can lead to successful and timely housing delivery in great numbers. Cosmo City was initiated as a Greenfield development of 1105 ha. The development aimed to provide 5 000 low income (subsidised) houses, 3 000 financed credit-linked houses, 1000 social housing rental units and 3 300 bonded houses. PDG (2011:1) states that subsidised and bonded units were constructed between 2006 and 2011 in overlapping phases. The first transfers took place in November 2005. Credit-linked houses were constructed in two phases in 2006 and 2007 and secondly in 2010 and 2011 and final units are expected to be completed by the end of 2012. According to Urban Dynamics (2010) the value of the bonded houses in 2010 ranged between R380 000 and R800 000. PDG (2011:6) states that demand for the bonded houses sold on the open market was initially very high. In 2006 the average price of these units was R440 000, with some being valued at well over R1 million in 2011

As mentioned the main focus of the Cosmo City development was the integration of different income groups and housing typologies in one sustainable community as illustrated by Figures 38, 39 and 40.

Figure 38: High density units in Cosmo City

Source: Own Photograph (2011)

Figure 39: Newer subsidised units in Cosmo City

Source: Own Photograph (2011)

Figure 40: Typical bonded home in Cosmo City

Source: Own Photograph (2011)

It has always been difficult to develop commercially successful bonded units in conjunction with subsidised homes. Cosmo City today has proven that integration is possible. According to Kgowedi (2008), double-storey bonded houses were a common site already in 2008. These homes boasted beautifully landscaped gardens and decorated perimeter walls. Today bonded units resemble and compete with homes in middle to high income areas (See Figure 42).

The success of the Cosmo City development becomes evident when measured according to the number of bonded units sold to families who chose to move to the area. This indicates the project's desirability from a housing marketing perspective (Urban Dynamics, 2010).

On a visit in 2011 it was difficult to judge whether or not true social integration and interaction always occurs between inhabitants of subsidised and bonded housing. A picture is presented which shows both inexpensive subsidised units and expensive triple storey homes in one development, but one will surely only be able to gauge the level of interaction between different economic tiers once one has lived and functioned within the community. Figure 41 and 42 illustrates the contrast between the subsidised and boned units located in Cosmo City.

Figure 41: A typical subsidised unit in Cosmo City

Source: Own Photograph (2011)

Figure 42: An expensive bonded home in Cosmo City

Source: Own Photograph (2011)

Apart from single subsidised units and bonded stands, nine high rise residential units were provided which supply rental housing to more than one thousand residents (Urban Dynamics, 2010). PDG (2011:6) states that demands for rental accommodation was slow initially, but in 2011 rental units reported 96% occupancy. The mix of housing available was the tool used to integrate the community and the mixes of amenities delivered provide the opportunity for community interaction. Facilities include 12 schools, 40 sites for churches, clinics and crèches, 43 parks and recreational sites and 30 commercial and retail sites. According to Urban Dynamics (2010) twenty seven hectares of industrial development was provided as an instrument to provide employment opportunities and promote the sustainability of the Cosmo City development.

PDG (2011:6) states that a 300 hectare environmental area intersects the Cosmo City development. According to Kgowedi (2008) this conservation area is fenced, containing animals, indigenous trees and other natural elements, which is quite an unexpected feature in a low-cost development. Providing the less fortunate with access to natural conservation areas should always be kept in mind when developing low-cost projects as a tool to improve quality of life. Apart from the conservation areas provided, quality play parks were also delivered.

Kgowedi (2008) states that the parks provided are an intense part of community life, with children seen playing there daily under supervision of workers from City Parks, who maintain facilities on a regular basis (refer to Figure 43). Public facilities should become a reality and not just a promise on paper. Quality facilities should be provided simultaneously with housing to ensure mature and well integrated spaces, which are actively utilised by the community, as is seen in Cosmo City. In the same fashion many economic and institutional land uses were provided.

Commercial and industrial sites, churches and other sites were and are sold on the open market and the Department of Education is responsible for the development of schools, according to Cosmo City (2005). The City of Johannesburg constructed a multi-use community centre which was inaugurated in 2011 (PDG, 2011:6).

The continued development of the Cosmo City extension helps to maintain the vibrancy of a growing and evolving community. In a bid to promote economic longevity a focus on supporting local entrepreneurs and private investment increases the odds of maintaining a sustainable community. As part of the support given to the local economy, informal trading is allowed in demarcated trading areas, which have proper marketplaces. A site visit in 2011 also revealed the recent investments of the private commercial sector with new and well known franchises opening their doors. It is important to note that further private sector investment in a low-cost development, may not take place immediately. Private investors may wait to ensure that a prominent market and safe environment becomes a reality. Only once the community feels motivated to invest in their homes and neighbourhoods can external economic investment be expected. In this regard the satisfaction of the community should be a key focus, not only for economic growth, but also for the sake of creating sustainable social and environmental prospects.

According to Cosmo City (2005) community participation was essential in the success of the development. The community was engaged via workshops, public notice boards, advertisements and personal notification processes. The design proposal accommodated the community's input and the success of the project today, testifies to this fact. Kgowedi (2008) states that the City continues to work closely with the community, teaching people about the by-laws that bind all the residents of Johannesburg. Community meetings with councillors are also held regularly to ensure continued participation and input. The City of Johannesburg has thus remained an important authoritative figure in conjunction with private developers.

PDG (2011:4) states that the City of Johannesburg was the land-owner and maintained overall supervision of the project and also provided top-up funding for infrastructure. The City was however not profoundly involved in project implementation. The Gauteng province was only involved through subsidy payments and administration.

According to Cosmo City (2005) the Gauteng Department of Housing provided housing subsidies, whilst costs for engineering and internal services were covered by CODEVCO, the Gauteng Department of Housing and the City of Johannesburg. Provincial housing subsidies sufficiently covered the cost of top structures but basic service allocations were inadequate to cover the higher levels of services provided in Cosmo City, including the tarred roads and subsurface electrical connections (PDG, 2011:7). Urban Dynamics (2010) sates that the level of engineering services delivered were optimised for a development of this nature in order to reduce future maintenance costs and provide an improved quality of life.

According to Kgowedi (2008) the signs of a vibrant, happy and healthy community were already visible in 2008. This was apparent in the fact that construction was going on everywhere, residents were seen cleaning their houses or working in their gardens and others trading on the streets. It seems that change and development is a constant in Cosmo City. One of the most positive contributions to be taken from Cosmo City is the continuous involvement of the developer, Basil Reed Developers, in the daily running and maintenance of the development. The continued success and growth of Cosmo City can be attributed to the continued accountability of the developer and the Initiatives launched by them to this day.

Kgowedi (2008) also states that the Cosmo City development was the first to provide solar geysers. In 2008 170 homes in Extension 2 had already been serviced with solar geysers, providing hot water to many residents for the first time in their lives. These systems cost R13000 per unit at the time; today many more of these systems are in place.

This is an important aspect to expand and introduce in all future low- cost housing developments in South Africa, as solar powered systems lead to financial savings in the long run. These systems also promote environmentally friendly heating, which aids in the creation of sustainable settlements. Development should occur in a manner which is as ecologically sensitive as possible.

According to Urban Dynamics (2010) trees were planted along all main roads after construction and each household received a tree to be planted in their garden, in an effort to enhance the green and aesthetic qualities of neighbourhoods.

Cosmo City is commonly seen as a principal influence on the establishment and adoption of government's Breaking New Ground Initiative of 2004 due to the successful implementation of the initial goals set out for the project. Many of the Cosmo City objectives such as the enhancement of the housing product, promoting densification and integration and enhanced spatial planning can be seen as principles in the Breaking New Ground Initiative document (See Table 2 Chapter 2).

In reality it must be kept in mind that the success of the Cosmo City development lies in the abundant funding and partnership with non-governmental and governmental agencies it enjoyed. The amount of funding made available to improve the design and physical quality of this project, makes it an almost utopian ideal of what should be applicable to all low-cost housing developments. Sadly the minimal amount of funding and resources are generally made available for low-cost housing development under normal circumstances given South Africa's restricted resources. An example of this was clear when attending a presentation by Basil Read Developers on site in April 2011, when it was stated that the impressive play parks found in the development cost in excess of R5 million each. The unique and unlimited environment found here is however not the case in the rest of South Africa where the most basic of public spaces planned are very seldom delivered according to standard or even delivered at all.

Figure 43 illustrates a typical park in Cosmo City where investments in sustainable and lasting materials, good design and continued maintenance lead to public spaces which are enjoyed by the entire community.

Figure: 43: A typical park in Cosmo City

Source: Own Photograph (2011)

Cosmo City furthermore shows little variety or alteration from the traditional layout approach, of long streets and intersections between rows of double blocks containing traditionally placed stands. The introduction of superblocks containing a variety of heights and typologies could have been introduced to better unify the different socio-economic levels in Cosmo City society. What is seen today is a development in truth consisting of different areas each containing separate levels of society.

This leads to an entirely new discussion on whether or not government's concept of integration is truly sustainable in the light of the economic role of bonded housing as a form of savings and asset; as well as the likelihood of investors buying homes next to subsidised units which imply many perceived social and economic problems which could hamper investment values. In light of this the Cosmo City model could prove to be the only sustainable option, even though it only promotes the most basic of geographical integration.

According to Urban Dynamics (2010) the Cosmo City development has received three awards which recognise the success of the project as a sustainable integrated housing project, namely:

- Best Housing Projects
- Best Developer of the Year
- Best Public Private Partnership of the Year

11.1.1 Conclusion to the Cosmo City case study

The successes of the Cosmo City development can be seen as a step in the right direction, but it is just as important to see it as one of the very first steps in creating a working and realistic model for low-cost housing delivery. In this regard a SWOT analysis is provided for the Cosmo City development in Table 15 in order to identify strengths, weaknesses, opportunities and threats.

Table 15: A SWOT analysis of Cosmo City

Strengths	More appropriate location, close to economic opportunities. Public/private collaboration and funding. Mix of housing typologies. Partial socio-economic integration. Commercially successful bonded units. Focus on a green environment, conservation park provided. Quality public parks. Continued private investment. Focus on preliminary and continued community participation. Continuous developer involvement.
Weaknesses	Partial socio-economic integration. Entire development concept dependant on fragile public/private partnerships.
Opportunities	Policy can be informed by innovative development approaches in practice as Cosmo City did for the BNG. Model for public/private partnership may be duplicated. Focus on neighbourhood quality. Success highlights the importance of appropriate locations.
Threats	A Unique and utopian ideal. Traditional layout approaches followed.

Source: Own construction (2012)

The following section will discuss the Olievenhoutbosch development in the City of Tshwane.

11.2 Olievenhoutbosch

The previous section (11.1) discussed the Cosmo City development as a predecessor to the BNG Initiative. Section 11.2 will discuss Olievenhoutbosch as a progression from the approaches followed in Cosmo City and as a project which implemented many of the BNG's objectives. Figure 44 illustrates the location of the Olievenhoutbosch development within the City of Tshwane.

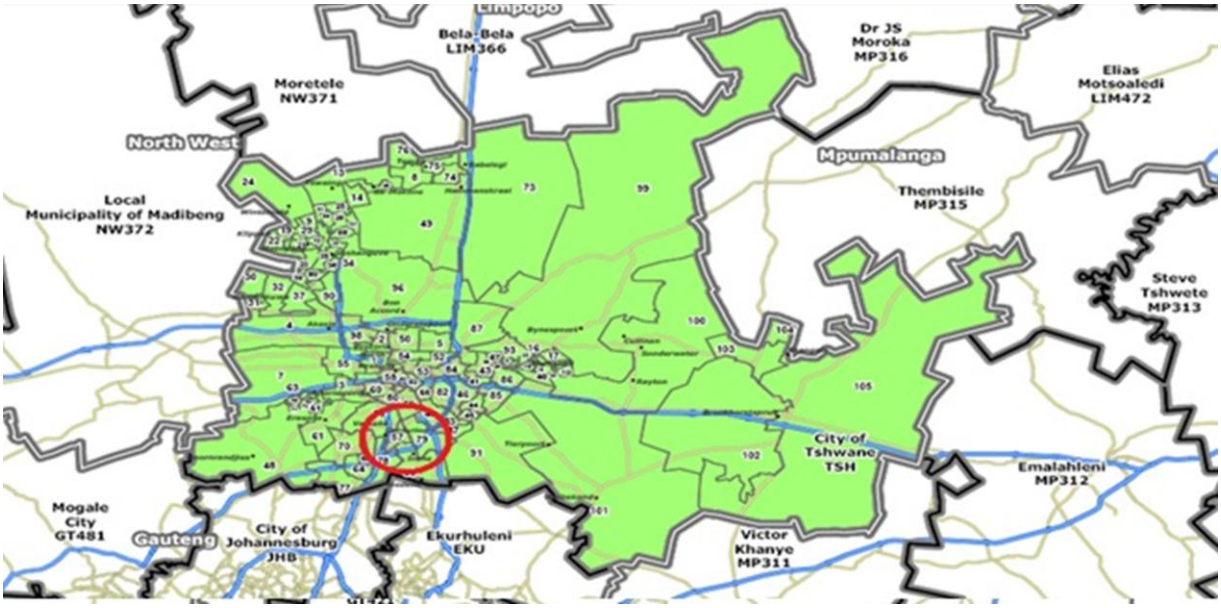

Figure 44: Olievenhoutbosch location

Source: Municipal Demarcation Board (2011b)

According to Bigen Africa (2006) Olievenhoutbosch is an integrated housing development located in the Tshwane Metropolitan Area in the Midrand/Centurion region, as illustrated by Figure 44. Dubruto & Associates (2010:1) states that the Olievenhioutbosch housing scheme is located within a development corridor which was identified by the Centurion Town Council in 1998. According to Smeddle-Thompson (2009:49) this location provides Olievenhoutbosch with close access to existing commercial and economic activities.

The Olievenhoutbosch project is grounded on the following key principles of urban design (Bigen Africa, 2011):

- Integrated sustainable communities.
- Open space planning and quality environments.
- Ease of movement with the appropriate focus on pedestrians.
- A well balanced layout.
- Following appropriate technical solutions.

Bigen Africa (2006) states that at its inception, the ultimate goal of the Olievenhoutbosch development was the creation of an integrated and sustainable housing estate which provides a variety of quality houses and services. The opportunity for families from all walks of life to establish homes in an attractive and secure environment was a key focus (Bigen Africa, 2011). In this regard partnerships proved vital.

The Olievenhoutbosch project was established as a collaboration between ABSA, the National Department of Housing, the Gauteng Department of Housing and the City of Tshwane. The expertise of various professionals was combined to provide a quality low-cost housing development. Smeddle-Thomopson (2009:34) states that the project's stakeholders negotiated the development process followed and collectively modified BNG objectives to suit the Olievenhoutbosch context.

Olievenhoutbosch clearly takes the principles of the Breaking New Ground Initiative into account. The developers state this document as one of the primary guideline giving documents applicable to this project (Bigen Africa, 2011). According to Smeddle-Thompson (2009:34) the Olievenhoutbosch development illustrates responsiveness to the faults experienced with the implementation of BNG objectives. These faults include underfunding, a lack of coordination between governmental spheres, a lack of infrastructure funding and cumbersome urban planning processes.

As with Cosmo City, Olievenhoutbosch sets integration as a main objective. Bigen Africa (2006) states that the project is a leading development; incorporating the principles of integrated spatial development and housing products, and inevitably also communities. The development aims to establish subsidised, institutional/social and individually owned, bonded housing products that complement each other and form part of a sustainable human settlement (Bigen Africa , 2011).

Integration is facilitated by delivering a total of 5436 mixed housing units. This total is comprised of 3 005 subsidised units, 1 263 institutional units in the form of affordable social housing and 1 168 bonded units. Figures 45 to 48 illustrate the mix of housing typologies in the form of subsidised and bonded units present in Olievenhoutbosch. The development also encompasses 17 business sites, 13 light industrial sites, 10 churches, 2 schools, 6 crèches, a community centre, a communal sport and recreational facility and 15 parks/public open spaces (Bigen Africa 2006).

Figure 45: A double storey semi-detached unit in Olievenhoutbosch

Source: Own Photograph (2011)

Figure 46: Single residential units in Olievenhoutbosch

Source: Own Photograph (2011)

Figure 47: Single storey semi-detached units in Olievenhoutbosch

Source: Own Photograph (2011)

Figure 48: A larger bonded unit being constructed next to a smaller bonded unit

Source: Own Photograph (2011)

Infrastructure includes a fully tarred road network and stormwater drainage, waterborne sanitation as well as individually metered water and electricity connections (Bigen Africa, 2011). Housing and sanitation are of vital importance in government's idea of 'housing the nation'. It is important to note that expensive investments such as sub-surface infrastructure provisions are part of a focus on proactive planning. Sub-surface power lines will last well into the future and provide a clean and uncluttered environment. This ads to the visual appeal of the area, which even in a low-cost development is of vital importance, especially when trying to lure private bonded home owners.

It is thus important that public/private partnerships are formed to facilitate delivery. It is interesting to note that Cosmo City, which precedes Olievenhoutbosch, is serviced by above ground electricity lines, whilst Olievenhoutbosch boasts sub-surface electricity provisions. The level of services provided would not have been possible if the Tshwane Municipality did not provide internal services on a top up basis. ABSA provided funding for bonded units as well as for the delivery of an improved level of services for the entire development in order to attract bonded investment (Smeddle-Thompson, 2009:38).

Olievenhoutbosch is designed around a central activity hub which is a walking distance to most areas, creating and enforcing the idea of community. Pedestrian movement and an emphasis on the connectivity of a community are aspects to be implemented in all low-cost housing developments. The implementation of courtyards and public squares, may aid in this objective.

This development indicates a form of progress form its predecessor Cosmo City in terms of service delivery and design innovation. It can be seen as one of the next steps in creating a sustainable and workable housing delivery model, given that financial restrictions are minimised and alternative sources of funding are procured.

According to Smeddle-Thompson (2009:55) Olievenhoutbosch was nominated as the best practice BNG case study for Gauteng in 2009 by the City of Tshwane.

11.2.1 Conclusion to the Olievenhoutbosch case study

Olievenhoutbosch can be summarised as a successful implementation of the BNG Initiative's main objectives. It can be seen as a sensible interpretation of the characteristics envisaged by government for the delivery of sustainable human settlements. Unlike the N2 Gateway project, which will be discussed in section 11.3, Olievenhoutbosch speaks to a well-planned and managed housing project which addresses the shortcomings of both the BNG document and the limitations of local and provincial government by securing public/private partnerships to improve service delivery and address integration issues. A SWOT analysis of the Olievenhoutbosch development is provided by Table 16.

Table 16: SWOT analysis of the Olievenhoutbosch development

Strengths	Provides a variety of housing typologies and finance mechanisms Located within demarcated development corridor. Integration as main objective. Extensive public/private partnership. BNG objectives are of primary importance. Infrastructure of a high standard. Emphasis on pedestrian movement A variety of social and institutional amenities are provided. Greening Initiatives implemented. Ecological design techniques implemented. Expanded Public Works Programme and skills training. Redefined institutional arrangements within government
Weaknesses	A more alternative layout could provide increased benefits. Dependency on partnership for delivery. The true level of ultimate socio-economic integration is questioned.
Opportunities	BNG objectives tweaked to suit specific development characteristics. All strengths listed above provide concepts to be considered in future development.
Threats	Initial high development costs which may hamper duplication of the strategies followed in future.

Source: Own construction (2012)

Section 11.3 of this chapter will discuss the N2 Gateway Project in the Western Cape which was initiated as one of the most ambitious housing developments in South African history.

11.3 The N2 Gateway Project

The following section will discuss the N2 Gateway Project which is located in the City of Cape Town, as illustrated by Figure 49.

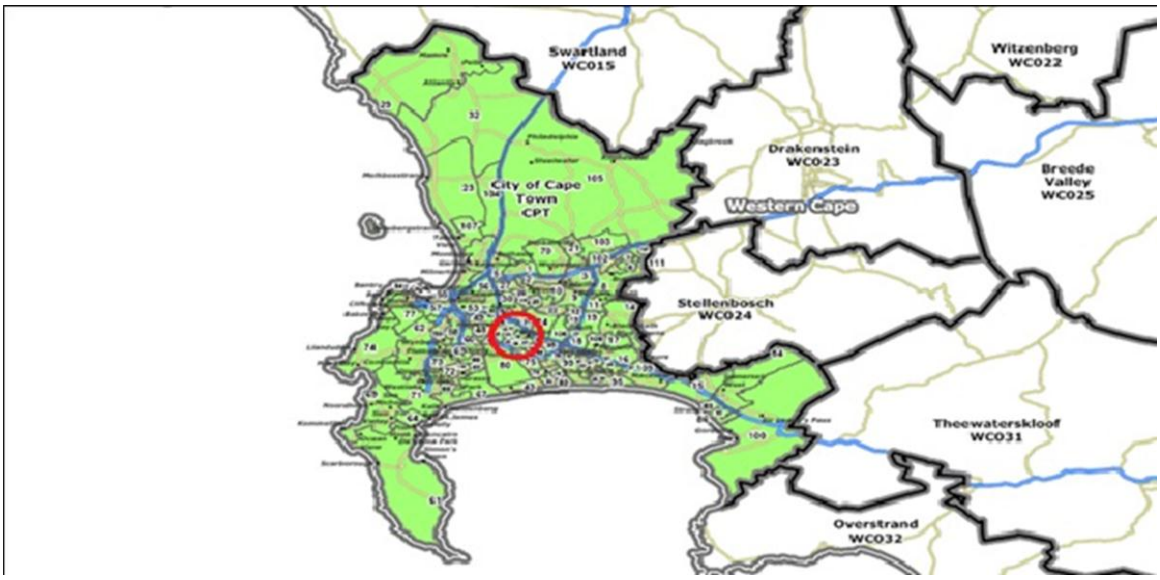

Figure 49: The N2 Gateway Project location

Source: Municipal Demarcation Board (2011c)

According to the Housing Development Agency (HDA) (HDA, 2011) the N2 Gateway was a national government-led priority project involving the building of fully subsidised, rental and affordable bonded homes to create sustainable communities in designated precincts along the N2 highway. The N2 Gateway Project's location is better illustrated by Figure 49. This residential housing project was developed as a measure to reduce the housing backlog in the city of Cape Town (COHRE, 2009:8). The N2 Gateway Project was perhaps the most apparent example of an area in need of housing intervention as this project was focused on an area of dense informal settlement which was highly visible due its location along the N2 highway in Cape Town (Rust, 2006:11). N2 Gateway is known as the most ambitious low-cost housing development in the history of South African housing delivery. The project aimed at its conception to provide 120 000 people with a home. This target would be met by delivering 23 000 housing units (HDA, 2011).

According to COHRE (2009:8) this development was initiated as a joint initiative between the National Department of Housing, the Western Cape Provincial Department of Local Government and Housing and the City of Cape Town. The N2 Gateway Project has often been described as a development which meets the need of the government rather than the community it is intended for.

The N2 Gateway project stretches over several sites including areas in (COHRE, 2009:8):

- The Joe Slovo informal settlement
- Delft
- Khayelitsha

Figures 50 and 51 illustrate typical sights in the N2 Gateway Project.

Figure 50: A typical image of units delivered in the N2 Gateway Project

Source: Own Photograph (2011)

Figure 51: Double storey units are very common

Source: Own Photograph (2011)

Du Toit (2007) states that the N2 Gateway project was launched as a measure to the South African government's Breaking New Ground Initiative, which aims to create integrated human settlements. COHRE (2009:8) also states the focus on providing a mix of housing densities and typologies which cater to the rental, subsidised and bonded market as objectives which relate directly to the BNG Initiative. According to Rust (2006:11) implementation problems have overshadowed the project's potential to truly demonstrate the merits of government's BNG Initiative. COHRE (2009:16) states that the N2 Gateway Project deviates substantially from the BNG which was intended as its primary guideline. The N2 Gateway project for example almost completely ignored any form of community participation and the overall location of all development areas was very inefficient.

The N2 Gateway Project was planned with an ambitious time table to quickly bring about the provision of an integrated, mixed income development. According to COHRE (2008:45) the project has generally been mismanaged and phases were initiated without the necessary preparation or expertise. Development on a smaller scale in phases should always be considered instead of an overly ambitious and unrealistic delivery goal, provided that these phases are well-planned and capable agencies appointed to administrate and manage development.

According to COHRE (2009:8) the N2 Gateway Project has dealt with a great deal of controversy and problems in both planning and implementation phases. The results of these difficulties became evident in the slow delivery of houses which are often of an inferior build quality, protests and forced evictions. After various obstacles such as court cases and community demonstrations, the project was handed over to the HDA in June 2009. The HDA has implemented measures such as better project management, improved communication and increased institutional ties (HDA 2011).

According to COHRE (2008:39) the N2 Gateway Project development approach lacked meaningful engagement between government authorities and communities. The disjuncture between government delivery and what communities expected or were initially promised may have contributed more to the negative outcomes experienced, than any other factor. The effects of a lack of communication with community members and inferior participation practices were intensified by the mismanagement of most other development practices.

Kgafela (2009) states that the auditor-general published a report in 2008 stating that the project had not been managed economically, efficiently or effectively. This was attributed to the fact that the business plan for the project was not finalised before construction commenced. This emphasises the importance of financial planning before breaking ground on low-cost developments.

On a site visit in July 2011 it became apparent that substantial development had taken place, but the socio-economic impacts of what had been delivered were difficult to establish. It became clear that planners and developers had to deal with a harsh and wind swept sandy landscape which made building and the provision of a sand free streetscape and neighbourhood fairly difficult. Here the placement of individual units closer to the street acts as a buffer for sand blowing onto and covering the street.

According to Ryan Thomas (2011), urban design principles were important in the design approach followed in areas such as Delft in the N2 Gateway Project. The aesthetic and supportive quality of institutional and public open spaces was of vital importance in creating a development which would uplift quality of life and satisfaction with the environment. The concept centred on the provision of well-designed and equipped public spaces situated in connected networks known as community spines. When it came to implementation however, funds were more limited than initially expected, leading to the delivery of unattractive and underutilised open spaces along important main roads, thus creating more problems than solutions, as illustrated by Figure 52.

The problem with most existing low-cost projects according to Dewar and Uytenbogaardt (1995:3) is that the public facilities planned, never become a reality and that a collective public environment which promotes a sense of pride in ownership, is neglected. The absence of the public facilities planned by firms such as NuPlan Africa in the N2 Gateway project leads to vast open spaces covered in sand and waste, leading to unsafe and aesthetically unpleasing spaces framing main roads. Other planned open spaces were filled in with awkward configurations of various housing typologies in an effort to overcome wasted space.

Figure 53 illustrates newer single storey, single residential units which point to a reaction on the poorly planned units which were delivered earlier.

Figure 52: An example of wasted space next to main access corridor due to budget cuts

Source: Own Photograph (2011)

Figure 53: Newer single storey units

Source: Own Photography (2011)

11.3.1 Conclusion to the N2 Gateway Project

In conclusion it is important to acknowledge the merits of a housing development such as the N2 Gateway Project. In order to address the growing demand for low-cost housing a proactive and large scale approach is needed. The scope of development should however not exceed the expertise of the authorities and teams charged with planning and managing delivery. In the end an important lesson to learn is that quality should never be surpassed by quantity and that community satisfaction should be the ultimate goal. The only way to guarantee said satisfaction is the provision of quality housing to all who need it. In an effort to better demonstrate the strengths, weaknesses, opportunities and threats related to the N2 Gateway Project, a SWOT analysis is provided by Table 17.

Table 17: A SWOT analysis of the N2 Gateway Project

Strengths	-Shows willingness from government to address housing issues. -Shows that government recognises the scope of the response required. -Set integration as objective. -Intergovernmental collaboration attempted. -Measure to BNG objectives.
Weaknesses	-Sufficient land not finalised prior to construction. -Detailed geotechnical surveys not completed prior to starting the project. -Selection of beneficiaries not finalised before construction began. -Time frame for completion of project was not realistic (six months to deliver 22 000 units) -Affordable housing not provided for identified target market -Funding arrangements not finalised. -Defects in houses already delivered to families were also present, resulting in protests. -Sub-standard housing provided which did not meet National Building Regulations. -Poorly management and planned. -Political interference. -To cover high costs, apartments were rented out to the poor at rents far above their income level. -Subsidised housing provided to the middle class, who could afford alternatives. -Unclear and bureaucratic policy framework. -Tense stakeholder relationships. -Lack of project management. -Negative racial perceptions. -Invasions and unlawful settlement. -Court actions by construction agencies. -Community protests due to lack of service delivery. -Allegations of corruption by contractors and government officials.
Opportunities	-Provides extensive proof of what approach not to follow. -Now provides opportunity for innovative infill development.
Threats	-Meets needs of government and not residents. -Overambitious and poorly planned time tables and financial management. -All weaknesses listed above provide threats to be avoided in future.

Source: Own construction (2012)

The following section will discuss the Ethekwini Municipal Study which will provide possible design interventions which could improve the housing products delivered.

11.4 The Ethekwini Municipal Study

Sections 11.1 to 11.3 discussed completed low-cost housing projects from around South Africa which each conveyed different best practice principles and lessons to be learnt. The following section will discuss a study which provides possible alternatives to housing design and general layout, which may be of value in the pursuit of improving low-cost housing products.

Section 11.4 refers to a study related to a project initiated by the Architecture Department of the Ethekwini Municipality in KwaZulu-Natal. The study's main objective was to develop alternative housing typologies for the delivery of new developments and existing settlement upgrading projects in the Ethekwini Municipal area. The study focuses on integrating urban planning, urban design and architectural components to optimise the quality and sustainability of low-cost housing conditions. For the purpose of the research conducted in this study, only key aspects which can be of value in any low-cost housing development will be discussed.

11.4.1 The opportunity to extend structures

According to the Ethekwini Municipal Study (2009a:16), a consideration to be made in the planning of alternative layout typologies is the provision of the opportunity to extend structures as the needs and economic resources of a specific family evolves. This is presented by a prototype for so called extended row units, as seen in Figure 54. According to the Ethekwini Municipal Study (2009a:17) this approach not only increases densities but smart design can also decrease initial construction costs.

Figure 54: An initial building structure as received by tenants and the manner in which units can be extended by filling the space between starter units

Source: Ethekwini Municipal Study (2009a:16)

Provision should be made in the planning phase for the extension of existing units by possibly providing pre-designed options which can be made available to residents wishing to expand their homes. Figure 55 illustrates the extension of units in a controlled and pre-planned manner. This approach provides for orderly and legal extension, whilst streamlining the building plan approvement process. Building lines and initial building placement will have to take these future extensions into account.

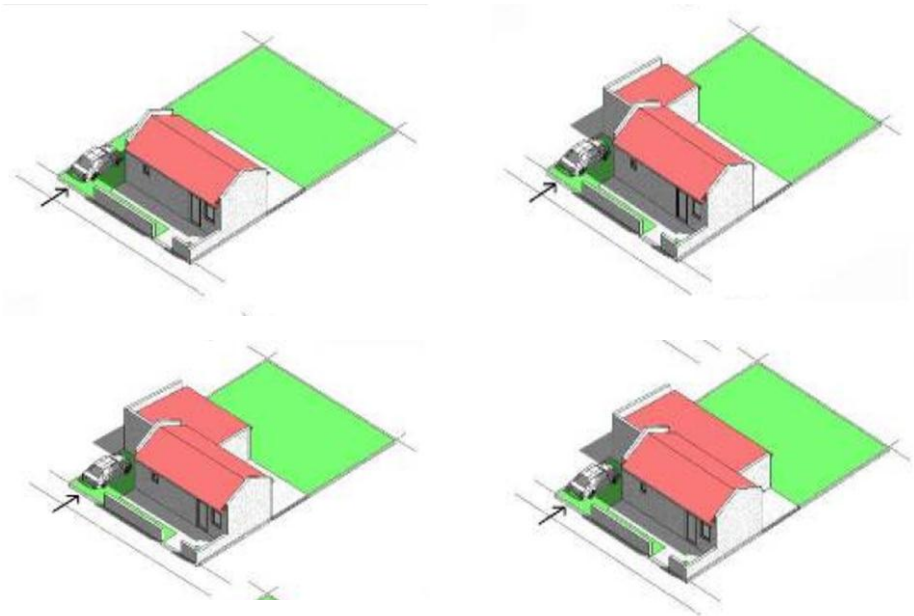

Figure 55: Proposed extension of single residential units

Source: Ethekwini Municipal Study Building the Principles. (2009b:22)

114.2 Adaptable and varied design

The Ethekwini Municipal Study (2009b:64) suggests that the introduction of a variety of housing typologies and designs which make use of different typologies in different combinations without the need for expensive redesign, is vital. An adaptable design approach will save both time and money.

The opportunity should exist to repeat or combine units such as detached, semi-detached or row housing in varied storeys, as needed. This principle will aid in increasing densities and the establishment of a more compact urban form (Ethekwini Municipal Study, 2009b:71).The layout and use of so called superblocks in planning need to be well researched and tested. The street, courtyard and cluster approach to layout design are but a few examples which can be introduced. The traditional grid street layout should however not be discouraged simply for the sake of implementing alternatives, as it can still prove efficient and effective in certain areas.

Planners need to investigate alternatives which fit the community and the area in which a housing project is delivered. A traditional grid pattern layout may be cost effective and generally efficient, but also leads to various traffic and safety problems. This option should be used as a last resort or in compilation with other layout alternatives. In reference to these alternatives the possibility of introducing cluster or courtyard based layouts should be investigated in conjunction with a variation in housing typologies. A variety of layout options is illustrated by Figure 56.

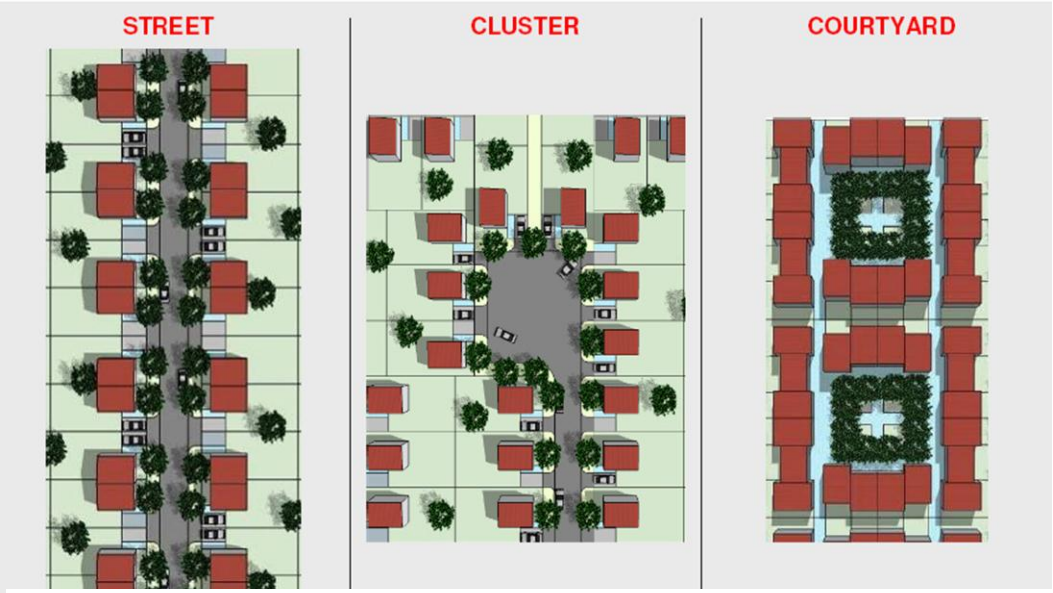

Figure 56: Possible variations in layout

Source: Ethekwini Municipal Study (2009b:90)

11.4.3 Housing on the street

Good design in terms of simple adjustments can make a substantial difference in the quality of life experienced by low-income inhabitants. An example is the placement of buildings closer to street boundaries to discourage the occurrence of unwanted structures like shacks and clothing lines in front yards. This creates a more ordered and aesthetically pleasing setting, whilst promoting a safer street environment through the so called ‘eyes on the street’ approach, which promotes involvement in street life and safety.

The Ethekwini Municipal Study (2009b:17) promotes the placement of housing on street due to various benefits derived from this layout:

Firstly the placement of units closer to the street will prevent fragmentation in terms of creating a small front and a small back yard; this results in one backyard space of ample area which can be much better utilised, as illustrated by Figure 57.

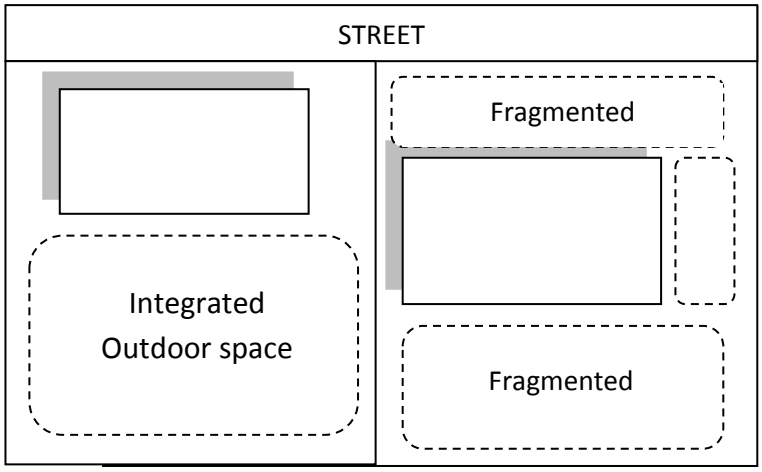

Figure 57: Fragmentation and top structure placement
Source: Own construction (2011)

Larger back yards also provide increased levels of privacy and safety, as these spaces can be made secure from street side intrusion, as illustrated by Figure 58.

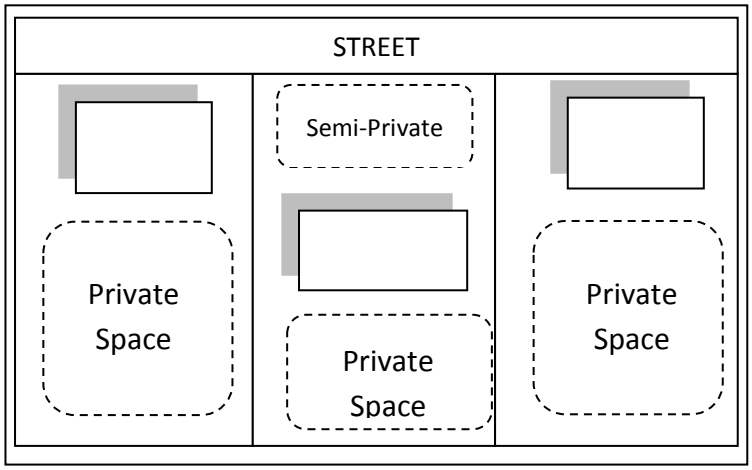

Figure 58: Private space and top structure placement
Source: Own construction (2011)

According to the Ethekwini Municipal Study (2009b:18) the placement of units on street fronts will also reduce infrastructure costs by reducing the distance to each unit from street side services such as sewer connections. Street lighting costs can also be reduced by attaching lighting components to units adjacent to the street space. Costs are further reduced for residents by creating smaller front gardens which require less maintenance. This provides additional savings which can be utilised by inhabitants to improve their homes or to cover other living expenses.

A third benefit is the possibility of community integration. Social integration is enhanced by the symbiosis between each individual unit and the street, allowing the street to become a focus for community life, emphasising viable and sustainable human settlements. This effect can be further enhanced by providing verandas facing the street, promoting the active use of the building facades as social spaces of interaction.

Placing units on the street furthermore enhances the quality of street spaces in a very cost effective manner, especially when building facades receive aesthetic consideration. Enhancing streetscapes is of utmost importance in low-cost areas where the quality of the environment has traditionally been undervalued.

By defining street spaces in a three dimensional sense with the placement of facades closer to street boundaries, urban qualities are optimised. The street thus gains a ‘sense of place’ rather than taking on the traditional role of a people mover centred on vehicular movement. The de-emphasis placed on the street as vehicular movement channel further promotes pedestrian safety, according to the Ethekwini Municipal Study (2009c:20). The placement of units away from the street creates larger front gardens which often become parking bays for cars, furthermore enforcing the car as a dominant element in the street scene, which is demoted by limiting front garden areas.

11.4.4 The importance of aesthetic urban design

It is crucial to note that cost effective aesthetic urban design principles can be introduced in low-cost housing areas as a means to improve quality of life and the satisfaction of residents in terms of a quality environment which enforces a unique identity and ‘sense of place’. Wherever possible the most cost effective methods to create variety and interesting public spaces and streetscapes should be sought.

A variation in building facades can, according to the Ethekwini Municipal Study (2009b:71), prove a very effective way to create visual interest. This concept is illustrated by Figure 59.

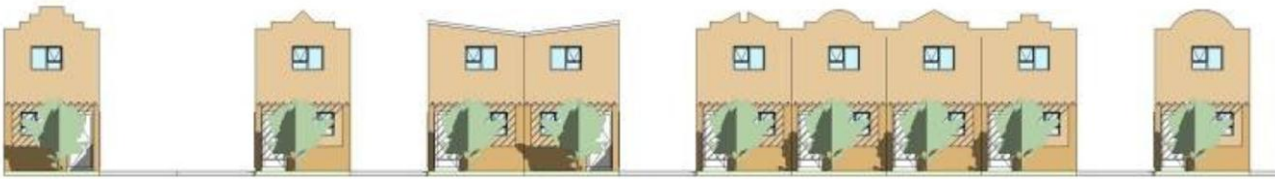

Figure 59: Simple examples of variations in building facades to create interest in a cost effective manner

Source: Ethekwini Municipal Study (2009a:71)

This approach does not call for elaborate architectural drawings and a large variety of designs, but rather suggests a minimal number of facade variations which can be used to alleviate monotony. The standardisation of a few plans leads to cost saving templates which can be easily and effectively applied in construction.

11.4.5 Conclusion to the Ethekwini Municipal Study

The Ethekwini Municipal Study provides some valuable suggestions on considerations to be kept in mind when developing low-cost residential units. The considerations suggested can be summarised by stating that housing should be delivered which is appropriate and adaptable in order to optimise a return on investments made. As a further summary of the Ethekwini Municipal Study's strengths, weaknesses, opportunities and threats is provided by Table 18.

Table 18: A SWOT analysis of the Ethekwini Municipal Study

Strengths	Provides innovative design solutions. Places a focus on: -Street life -Community interaction -Adaptability -Urban design -Integration
Weaknesses	May introduce additional development costs, especially with regard to professional fees.
Opportunities	Principles which may be of value in future development: -Placing units close to street boundaries. -Providing for the regulated preapproved extension of units. -Focussing on aesthetic principles. -Integrating various housing typologies. -Utilising alternative layouts.
Threats	Demands a more intensive and prolonged planning phase which postpones development.

Source: Own construction (2012)

In order to provide clarification on the approaches followed and constraints experienced in the planning phase of a low-cost housing development, the following chapter will discuss the planned Rose Valley Extension in the Western Cape.