

Planning for sustainable communities: Layout and design approaches

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1. Abstract

The composition and dynamics of the urban environment have become increasingly complex. The planning and development approach of a specific area and its adjacent areas should primarily promote specific lively elements that will effectively enhance liveability, sustain meaningful and continuous community development and subsequently attract and retain more people to that particular place. However, cultural diversity in regions, cities, towns and local communities has emphasised the need to reconsider and redesign, planning and design approaches that aim to harmonize the natural environment and resources of an area with the diverse needs and aspirations of the community.

Resourceful design approaches, strategies and policies employed in the planning of sustainable communities and the redevelopment of existing areas, will ultimately lead to well managed and protected, healthier, safer, greener, economic sustainable and liveable communities. Varied use of activities and facilities such as employment centres, residential neighbourhoods, natural areas, parks, local trails, schools, and public places can lead to a physical connection to create authentic neighbourhoods. Sustainable communities tend to have lower transportation costs, less traffic, are more economic in terms of housing and market demands, decreasing costs in terms of infrastructure, reduced air pollution and the ability to create a safer environment.

This research aims to explore and understand international and local integrated planning and design approaches currently utilised to guide the planning of sustainable communities. Reviewing different international and local layout and design approaches will aid to define and create improved planning approaches for sustainable communities. Place making and planning approaches should closely observe social and environmental complexities of modern society. Public participation therefor plays an essential role in determining the basic needs of the community and must be included as a fundamental building block in the planning process

2. Sustainable communities

Hart (2012) contends that “a sustainable community seeks to maintain and improve the economic, environmental and social characteristics of an area for its members can continue to lead healthy, productive, enjoyable lives”.

The concept sustainability explores the relation among economic development, quality of the environment and social equity.

Policies and strategies for sustainable development should simultaneously promote continuous economic opportunities, enhance environmental fundamentals and focus on the social well-being of the community to ensure an evenly balanced environment. Policies have to advocate impartiality between different generations, races and genders to ensure equal and uncomplicated access to available opportunities and facilities.

Quality of life is a main objective of sustainable development. The principle of planning for human wellbeing is thus of paramount importance and hinges significantly on immediate and visual changes to lifestyle.

The major features of sustainable community development include; ecological protection, density and urban design, infill village centres, local economy, sustainable transport, affordable housing, liveable community, sewage and storm water, water, energy and the three R's: construction waste recycling, environmental sound building materials, provision of in-housing recycling areas (Peck & Dauncey, 2002).

3. Planning for sustainable communities

A sustainable community underwrites objectives that reflect respect for both the natural environment and human nature. In this regard the use of appropriate technology is invaluable. A sustainable community should essentially strive to achieve the following characteristics and goals:

- Place a high value on quality of life. A sustainable community accepts that communities are first and foremost for people and that the primary objective of the planning and development process is to improve the quality of life of its residents, socially, economically, psychologically, and spiritually. It implements policies to achieve quality of life and does so in a fair, open, and democratic manner.
- Respect the natural environment. A sustainable community recognizes its relationship to nature and sees nature's systems and components as essential to its well-being. It provides access to nature through metropolitan parks, open-space zones, and urban gardens. It understands the sensitive interface between the natural and built environment, develops in a way that will support and complement-not interfere with--nature, and avoids ecological disasters.
- Infuse technology with purpose. A sustainable community uses appropriate technology, while ensuring that technology in the built environment is a means to an end, rather than an end unto itself. It emphasizes learning and understanding how existing and new technology can serve and improve communities, not vice versa. It sets clear and measurable goals for what it wants technology to achieve.
- Optimize key resources. A sustainable community takes an inventory of its human, natural, and economic resources and understands their finite quality. It ensures that forests are not overused, people are not underemployed, and the places of the built environment are not stagnant and empty. It reduces waste and reuses resources: it creates conditions in which all these resources can be used to their fullest and best potential, without harming or diminishing them.
- Maintain scale and capacity. A sustainable community recognizes the importance of scale and capacity, with regard to the natural and human environment. It ensures that the environment is not overdeveloped, overbuilt, overused, or overpopulated. It recognizes the signs of tension that indicate when the environment is overstressed and can adjust its demands on the environment, to avoid pollution, natural disaster, and social disintegration. (Geis & Kutzmark, 2006).

The planning and design of sustainable communities are essential. "Everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures that prevent pollution and ecological degradation promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development" (United Nations (UN). 1997).

4. Layout and design approaches (Place making)

"You have to turn everything upside down to get it right side up" (Project for public spaces, 2011). This emphasises the bottom-up approach and community-scale of planning. Place-making was introduced in the planning sphere to address community-scale planning with the objective to create qualitative, liveable environments that adhere to the principles of sustainability. Figure 1 highlights and summarizes important elements of place-making.

The place-making-approach can be employed to realise liveability by implementing various functions within one space. This ensues in the transformation of areas from solely being places that people occupy, so called ordinary spaces, into liveable places. In order for this to realize, the main focus should be placed on current public spaces within communities that has potential, and the development of these spaces according to this place-making approach in order to create places in which people can socialize and interact (Cilliers et al., 2012:11).

Hence, an ordinary space within a community is developed through the inclusion of lively elements, whereby a space is transformed into a place with good *genius loci*. In these lively public spaces that are now created, numerous functions and activities regarding community life will take place, and the people inhabiting this place will possess a feeling of ownership and connectedness according to Cilliers et al. (2012:11).

The idea is also to include more than one great place in a neighbourhood for a city or town (or in this case a rural community) to be regarded as a truly lively place (Cilliers et al., 2012:12), thus integrating a variety of functions within one space, as illustrated by Figure 1.



Figure 1: Place making elements

Source: Baltimore City Department of Planning (2010:90)

4.1. *Current place-making theories and principles*

When citizens are effectively engaged in a design process then designers and planners can be their most effective too; facilitating a process that synthesizes local experience and wisdom with design principles and technical expertise. Designers can help people uncover their common interests and work towards practical, creative solutions that build on local character and assets. (McBride, A. 2013) Irrespective of the environmental attributes of an area, the community should be the primary source of information when planning and designing a specific place.

Participation can be seen as an approach to lively planning or as an element needed to create a lively place. The inclusion of the public in creating places is a difficult and complex process because of the diversity of the members it tries to accommodate: The more diverse the group, the more needs that need to be taken into consideration and therefore the more complex the participation process and input will be (Breman *et al*, 2008:17). Even though it is difficult to implement, participation still remains a critical part of planning for sustainable communities and public places and this participation of all residents along with supervision, reviews and awareness are important for effective place making (Loudier & Dubois, 2001:9). According to Cilliers *et al*. (2012:11), this qualitative participation approach is needed to address and successfully implement a bottom-up approach and ensure the planning of functional and usable spaces that can be regarded as lively. To create this type of situation where active participation is present, the community needs to play a bigger role in terms of discussions with authorities, policy formalization, creating solutions.

Equally important is that planning and design approaches should at all times endeavour to harmonize the needs of the community with the natural layout and resources of the environment to ensure an effective and sustainable design.

Continuous monitoring of the implementation and progress of the place-making and design process is imperative. Therefore transparent management and evaluation of the approach should be maintained to ensure that effectual amendments can be made timeously when deemed mandatory.

4.2. *The role of green spaces in place-making*

A community is often identified by the quality of their parks, gardens and open green spaces. This ultimately raises a sense of accomplishment and delight in the people of that community. Green spaces furthermore enhance the environmental appearance of a neighbourhood and contribute to the biodiversity of the eco-system. Table 1 describes the 3 key principles established by the Perth and Kinross Council to achieve the objectives and accomplish their vision of greenspaces.

Principle		Description
Provide for nature		<ul style="list-style-type: none"> Environmental sustainability Provide for a range of habitats for wildlife Link habitats together
Provide for people		<ul style="list-style-type: none"> Economic and social sustainability Face the greenspace Provide access to and within the greenspace Encourage activity Provide amenity and interest
Maintain		<ul style="list-style-type: none"> Physical sustainability Design and build to last Good maintenance - funding of up keep is more important than capital Involving the community and encourage use

Table 1: The 3 key principles of green-spaces

Source: Perth and Kinross Council, 2013

4.3. The status quo of South Africa

South Africa's policy of apartheid that prevailed between 1958 and 1994 has had an enormous impact on the existing layout and design in this country. Policy makers, Urban Designers and Regional Planners are presently confronted with fragmented, spatially segregated and detached urban and rural areas and communities. According to Asmal (cited by Donaldson, 1999) "The victory over the apartheid state in 1994 set policy makers in all spheres of public life the mammoth task of overhauling the social, political, economic and cultural institutions of South Africa to bring them in line with imperatives of a new democratic order."

What complicates the South African settlement patterns further is the difficulty in categorizing settlement types. Due to separate development and apartheid policies, a unique set of settlement categories developed, unlike the familiar urban and rural differentiation. The White Paper on Local Government 1998 (cited by Donaldson, 1999) lists 9 categories:

- Urban core
- Urban fringe
- Small towns
- Dense rural settlements
- "Betterment" settlements
- Informal settlements
- Villages
- Agri-Villages
- Dispersed and scattered settlement

Each of these categories is "complicated by variations in features such as land tenure systems" (Donaldson, 1999)

Sustainable development is undeniably part of the present-day and future layout and design approaches in South Africa. Since 1994, gigantic steps have been taken towards a more sustainable community planning approach. The Government continuously endeavors to devise policies and approaches that will promote sustainable livelihoods inside urban and

rural areas. It is therefore prudent, as for any government, to frequently compare relative policies and approaches thus assessing the efficiency of their own attempts.

The following table illustrates the South African and International approaches regarding primary aims and focusses, different programs implemented and the success with regards to liveability.

	South African approach	International approach
Primary aims and focus	<ul style="list-style-type: none"> • Improving opportunities and well-being of people in communities by implementing sustainable elements. • Improving rural-urban linkages • Eradication of poverty • Job creation 	<ul style="list-style-type: none"> • Mainly focused on creating lively places and reducing the number of people living in poverty.
Programs implemented	<ul style="list-style-type: none"> • Integrated Sustainable Rural Development Strategy (ISRDS) <ul style="list-style-type: none"> - Decentralisation and promotion of local power and autonomy in decision making • Rural Development Framework (RDF) <ul style="list-style-type: none"> - GEAR (<i>Growth Employment and Redistribution</i>) 	<ul style="list-style-type: none"> - Sustainable Livelihoods Approach in White Paper on International Development - Toronto's Creative City Planning Approach.
Success with regards to liveability	<ul style="list-style-type: none"> • As mentioned, the RDF has a chapter based on sustainability and livelihoods. Therefore, if implemented accordingly, the policy can be regarded as successful. • ISRDS focuses on providing opportunities for rural people. This is a core aspect of liveability (especially with regards to multiple opportunities and functions) and, as mentioned above, if the policy implemented 	<ul style="list-style-type: none"> - The DFID used a top-down approach, therefore not primarily focussing on individual needs and participation. This is a core aspect of livelihood and therefore, in terms of liveability, cannot be regarded as successful. - Toronto follows an approach based on participation and focussing on addressing and improving specific needs through liveliness. The success is based on the inclusion of the public and strong plans and policies with will and

	accordingly, it can have a successful livelihood influence.	determination.
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Table 2: Summary of sustainable community development planning and design approaches internationally and locally.

Source: Own creation (2012)

However the composition and cultural diversity of the people of South Africa is complex and there remains much to do to amend and eradicate the unsustainable circumstances and elements in communities. Only a small portion of the population has a high quality of life and has access to quality services and infrastructure. The inequitable distribution of resources and wealth are the reality of our society and economy.

5. Conclusion of layout and design contribution to sustainable communities

The purpose of layout planning is to provide a framework within which numerous collective and individual investments may be accommodated over time, in a mutually reinforcing and development manor Behrens and Whatson (1996:7-12). This implies that the layout plan should indicate a minimum set of spatial interventions rather than attempt to be more comprehensive. Behrens and Whatson (1996:13)

Fundamentals that impact an effective layout plan are: land use management systems, the availability of land, the financial status and the accessibility of finances, level of implementation of policies and legislation and political determination.

Planning for sustainable development is directed by a combination of broad planning guidelines and normative planning concerns. General planning guidelines for urban planning include the movement network and transport, the open space system which is made up of the hard open spaces and the soft open spaces, public facilities, public utilities, land subdivision, cross-cutting issues such as: environmental design for safer communities, ecologically sound urban development and fire safety, economic services such as employment generation, urban markets, manufacturing infrastructure and urban engendering services (Guidelines for Human Settlement Planning and Design: 2000: National Department of Housing)

The normative planning concerns include place making, scale, access, opportunity and choice Behrens and Watson (1996:66)

A familiar planning approach for sustainable development is the linking of various planning guidelines and normative planning focusses.

PLANNING FOCUS	LAYOUT PLANNING PRINCIPLE
PLACE MAKING	<ul style="list-style-type: none"> ➤ Focus on a hierarchical system of hard public places (for example squares, markets) and the main structuring element of urban areas, in order to establish loci for social interaction and community events and create places that shape enduring impressions of the settlement. ➤ Respond to the cultural context of a site by understanding traditional ways of making local cultural landscape (for

example patterns of planting, road alignments, locations of symbolic buildings or scared buildings and spaces.) incorporating these into layout plans in order to ensure existing forms of the cultural landscape are mentioned.

- Respond to the cultural context of the site by identifying the implications of natural characteristics (For example topography, vegetation, climate etc.) for layout planning, in order to accentuate uniqueness, and bring the presence of natural landscape visually into settlement.
- Define hard open (for example, squares, road reserves) through the juxtaposition of public buildings, public furniture and tree-planting, in order to create outdoor 'rooms' which provide a sense of enclosure, greater safety through public surveillance, and protection from the natural elements.

SCALE	<ul style="list-style-type: none">➤ Link soft open spaces (for example, public parks, playing fields, etc.) in order to form networks of recreational space that provide opportunities for the creation of continuous walkways and greater levels of urban biodiversity.
ACCESS	<ul style="list-style-type: none">➤ Provide middle and lower order road networks with a continuous functional gradation of road types, in order to reconcile the needs of numerous road functions (for example, social, economic, aesthetic) and road users (pedestrians, street traders, motorists) and accommodate different modes and types of traffic movement (for example, through, stop-start, access seeking)➤ Integrate the local road network with surrounding movement system and land use pattern, in order to improve levels of interconnection, extend important routes through the area, and provide opportunities for increased coverage and penetration of public transport operations.➤ Prioritise pedestrian movement by providing direct, safe and convenient routes between different land use activities and public transport stops, in order to increase levels of intra-district access for the most vulnerable and very often poorest group of users.➤ Design open and flexible middle and lower order road geometries which offer numerous possibilities through connections, in order to enable complex systems of movement to emerge (for example, the mix of through, local and pedestrian movement associated with vibrant 'activity streets') to facilitate unrestricted pedestrian movement, to provide public transport vehicles with direct and convoluted metropolitan movement patterns, land-use distribution and modal split.
OPPORTUNITY	<ul style="list-style-type: none">➤ Expose the public facility system by locating the majority of facilities along main public transport routes, in order to make them as accessible as possible, enable complex patterns of use between different neighbourhoods, and create the

	<p>conditions necessary to encourage private commercial and industrial investments.</p> <ul style="list-style-type: none">➤ Concentrate local through-movement onto continuous connecting 'activity' routes through the routing of public transport services and location of movement generators (for example, public facilities, modal interchanges etc.), in order to create the passing consumer thresholds necessary to support viable small end large-scale commercial activities.➤ Provide hard public spaces as points of greatest access (for example, modal interchanges, intersections), in order to create the spatial conditions necessary for formal commercial investment and informal trading opportunities.➤ Cluster collective service points around hard public spaces in order to create favourable small-scale manufacturing and trading conditions (by providing the necessary utility services and attracting potential consumers to specific points in space), and in cases where these services perform residential functions as well, enable a single trip to satisfy numerous household needs.
EFFIENCY	<ul style="list-style-type: none">➤ Incorporate public markets (for example, agglomeration services and stalls) at points of greater access, as an element of essential public infrastructure, in order to assist small-scale manufacturers and traders by providing central trading locations and creating agglomerations of small traders capable of competing effectively with larger commercial establishments.➤ Cluster public facilities according to their hierarchical and lateral functional relationships (for example, medical referrals, book circulation), in order to facilitate the sharing of resources (for example halls, playing fields, teaching equipment) between facilities, and enable a number of household needs to be satisfied in a single trip.➤ Integrate public open space networks with high utility services like major storm water management systems (for example, retention and retarding ponds and solid waste disposal sites, in order to enable these spaces perform numerous functions, public open spaces acting as overflow facilities in the event of severe storms, and storm water storage facilities providing landscaping features.)➤ Facilitate efficient service provision and land utilisation by optimising the layout for particular combination of service options provided (for example, avoiding steep or flat road gradients, reducing road length per erf) in order to enhance the affordability of the development through reductions in the unit cost of land acquisition and service provision.

Table 3: Summaries of overarching planning focusses and layout planning principles in South Africa.

Source: *Guidelines for Human Settlement Planning and Design, 2000* (cited by Bogopo, 2005:190-193).

6. Conclusion

Albert Einstein said: "We shall require a substantially new manner of thinking if mankind is to survive" (Geis, & Kutzmark, 2006).

Resourceful design approaches, strategies and policies employed in the planning of sustainable communities and the redevelopment of existing areas, will ultimately lead to well managed and protected, healthier, safer, greener, economic sustainable and liveable communities. When planning and designing layouts for sustainable communities, a new and innovative way of thinking is desirable regarding interrelationships between economic, environmental and social well-being of the community. Quality of life is a main objective of sustainable development. The principle of planning for human wellbeing is thus of paramount importance and hinges significantly on immediate and visual changes to lifestyle.

More recent theories conversely depict that the objective location of people is not directly related to their subjective contentment. The latter can be manipulated by sustainable and lively initiatives that will enhance the quality of life irrespective of income, education, age or gender. Hence policies and strategies should not merely endeavour to eradicate poverty, create jobs or deliver houses, but embrace decisive sustainable and innovative initiatives that will effectively transform an area in a liveable and sustainable community.

Community participation and education will ensure the essential effective management of available resources to sustain this objective. Planning and design approaches should at all times endeavour to harmonize the needs of the community with the natural layout and resources of the environment to ensure an effective and sustainable design.

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