

DESIRABILITY OF BROWNFIELD REDEVELOPMENT FOR URBAN REGENERATION IN MAGAJI ARE WARD I, ILORIN, KWARA STATE.

*JIMOH M.Y.¹, ASONIBARE R.O.², AINA C.O.³ AND ISSA S. B.⁴

¹Department of Urban & Regional Planning, University of Ilorin, Ilorin, Nigeria. ²Department of Surveying and Geo-informatics, Kwara State Polytechnic, Ilorin, Nigeria. ³Department of Tourism and Events management, AfeBabalola University Ado Ekiti, Nigeria. ⁴Department of Surveying and Geo-informatics, Kwara State Polytechnic, Ilorin, Nigeria.

Corresponding E-mail: eemayusuf@gmail.com

Abstract

Recent discussions of urban growth management have emphasized a smart growth through Brownfield redevelopment concept, this has been intensively discussed, well documented and has been well tested in economically prosperous region like Canada and the United States. Attention has not been paid in this regard, to the peculiar circumstances of the developing regions like Nigeria, with low literacy level, and largely unplanned urban neighbourhoods. It is against this background that this paper seeks to appraise the desirability of Brownfield redevelopment strategy as a creative and continual develop mechanism in the cities of developing economy, taking Magaji Are Ward I in Ilorin metropolis as case study. The use of questionnaire was employed as the main data collection instrument, where oral interview and field observations compliment. About 461 questionnaires were distributed among the inhabitants addressing issues relating to their personal views on situation. Eighty (80) questionnaires were also administered on the ownership of the identified Brownfield, regarding their readiness to release such, for public/private use and general views and opinions on the concept. The average/percentage and frequency of occurrence were obtained. The results of the study revealed an overwhelming presence of Brownfield sites in various sizes in the study area and further established a general agreement on the desirability of the concept of its redevelopment. About 65% of Brownfield owners oppose the sale of their sites; but 45% of them opted and suggested the Build Operate and Transfer (BOT) concept of redevelopment while about 21% of them opted for partnership arrangement, on 70/30 equity ownership in favour of the original owner. The paper recommends an extension of scope of Brownfield definition to cater for peculiarities of developing countries and in conclusion recommends adequate public (stakeholders) education and involvement for land assemblage and the establishment of Brownfield Development Unit in Planning Authorities in the state out of other strategies.

Keywords: Brownfield, Smart growth, Stakeholders enlightenment, Sprawl

Introduction

Since the mid-1980s, policy makers and planners in North America and Europe have been paying significantly more attention to measures designed to foster sustainable development and improve the quality of life in urban areas. Of these, one that has gained widespread political support in the US and Canada is the redevelopment of under-utilized Brownfield sites, which are often located in the core sections of urban areas and, as

such, are prime targets for urban revitalization. Christopher (2002). The most widely accepted definition of Brownfield is the one provided by the US EPA (1997, p. 1), which defines them as "abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination." The term is used to refer to both *known* and *suspected* contaminated sites because of previous land-use activities (e.g. waste

disposal, manufacturing, service stations, etc.). By this definition, a tremendous number of sites can be characterized as Brownfield. This is because the actual severity of contamination is not specified and the environmental problems can be merely suspected as well as actually documented. Most Brownfield sites found in Nigerian as typical of underdeveloped or developing countries' cities have historic or traditional affiliations. Thus, the definition as presented above may not be encompassing for less industrialized and developing regions such as Nigeria. Meanwhile, the Authors suggest an extension to abandoned uncompleted and formerly occupied residential buildings, manufacturing or warehousing facilities, plants and railroad yards that show signs of pollution be inclusive in the definition to cater for the peculiarity of the developing regions like Nigeria. By this, certainly, many communities' contaminated Brownfield sites such as commercial properties like old markets or gas/filling stations, sawmills, mechanical workshops, with leaking contaminations from them, which could be physical, mental/psychological and security threats to lives and properties e.t.c. will receive attention. It is on this background that this paper seeks to examine the desirability of Brownfield development as a sustainable strategy for urban Neighbourhood revitalization using Magaji Are Ward I in Ilorin-east L.G.A. It is the view of the authors to adopting it as a strategy capable of preserving the "sense of place" and community. To also lessen the growth pressure on the rural areas and their "Greenfield" sites in urban fringe tackling sprawl and achieve smart growth in Nigerian cities. To achieve this, the paper attempts the identification of the characteristics of the identified Brownfield sites in the study area. It also attempts the assessment of the desirability of the redevelopment while measuring the Opinion of residents on the desirability of Brownfield redevelopment as a strategy

for urban regeneration. In the same vein, the expected challenges in the redevelopment of the sites were also identified. The paper finally recommends some strategies capable of restoring the pride of place to the inhabitants of the inner city by stemming the negative externalities associated with living amidst Brownfield sites.

Literature Review

The scientific literature on the redevelopment of Brownfield and contaminated lands in the US and Canada has been steadily expanding. To date, however, most of the research has concentrated either on technical aspect of the problem or on the viability of policies for regulating and/or stimulating economic redevelopment activities (Ford et al., 1994; Meyer et al., 1995; Asante-Duah, 1996; Page, 1997; Simons, 1998; De Sousa, 2001). Nowadays, it is widely recognized that Brownfield revitalization has the potential to promote sustainable growth especially in urban areas. Damigos & Kaliampakos (2012). Governments at all levels have, in fact, started implementing a wide range of innovative policies intended to lessen the costs and risks associated with Brownfield redevelopment, so as to make it attractive and feasible. Such policies have led to a kind of "inner city recovery," as thousands of sites have been cleaned up and redeveloped. Christopher (2002). In Europe, the greening movement has been playing a much more central role in the design of sustainable communities than it has in North America. For instance, between 1988 and 1993, over 19% of Brownfield (derelict) sites in Britain were converted into green spaces—more than any other end-use (UK DETR, 1998). On the other hand, in North America, the focus has been put instead on the economic benefits that can be attained through public-sector support of private-sector redevelopment for industrial, commercial, and residential purposes (United States Conference of Mayors,

2000). A 1996 study found that Brownfield in Detroit, Chicago, Milwaukee, and Cleveland could absorb one to five years of residential development, 10 to 20 years of industrial development, or 200 to 400 years of office space. This means that if communities encourage development in existing areas and with that, the redevelopment of Brownfield, communities can reap real benefits. These benefits can include: a stronger tax base, closer proximity of jobs and services, taxpayer savings, reduced pressure to build on Greenfield sites, and the preservation of farmland and open space. (Lauren 2006). It was further stressed that when development occurs in existing places it is easier to protect open space and natural lands and to minimize increases in impervious surfaces. (Jimoh 2005). Lauren (2006) further asserts that it helps to protect watershed-wide water quality, creating more transportation choices in existing places, which invariably lower vehicle miles travelled and ultimately improve regional air quality and water. Damigos & Kaliampakos (2012) also observed that ...'when examined from a social point of view, (Brownfield projects) create an economic value and contribute significantly toward sustainable development.' In another development, Cecilia and Andreas (2010) report that, with Brownfield redevelopment strategy, housing target has been met consistently since 2000. When considered the actual amount of Brownfield land used for residential purposes during 2000–06 (2,774 hectares a year) which was only marginally higher than that achieved throughout the period 1989–98 (2,644 hectares a year). They further assert that, there has actually been a decline in the total amount of land used for residential development from 5,660 to 4,765 hectares a year over the two time periods. See also DETR, 2000 and DCLG, 2010. In her own view, Linda (2001) notes and further supported by several other authors that Brownfield remediation and

reuse can provide numerous benefits for the public sector and Community. It promotes increased private-sector investment at the site itself and in the immediate area of the site. These are higher tax revenues from the increased economic activity at the site and its immediate area; job creation in the firms that remediate the site, in the new businesses that are then established at the site, and in those organizations providing goods and services to the new companies. It also better environmental quality of the land, water, and air. After the site has been remediated; better public health; improved public safety when vacant and derelict sites are redeveloped; and a host of other benefits. See also HUD (2001), Bartsch & Collaton (1997); Black (1994); Gibbons *et al.* (1998); Lerner (1996); Cecilia (2010); Meyer & Van Landingham (2000); and Simons (1998). "Location" is undoubtedly considered by Paul Syms (1999) as one of the most important factors in deciding whether or not to undertake a property development; however, when considering the redevelopment of a "Brownfield" site it may be only one of a number of issues which need to be considered as part of the decision-making process. Paul Syms, (1999). In line with the above submissions, Mashayekh, Hendrickson, and Matthews (2012) noted that Developing underutilized urban industrial sites with certain characteristics (i.e., close proximity to transit, job and services, low remediation cost, and high density) can potentially reduce the transportation sector's impact on the environment by lowering vehicle kilometers travelled (VKT) and related Green House Gas emissions. They further reinstated that, on average, residential Brownfield developments reduce VKT by 52% compared to conventional Greenfield developments. Also on average, Brownfield developments result in a time and fuel cost reduction of 60% and an external environmental cost saving of 66%. Comparing these cost savings with

the initial one-time cleanup cost of Brownfield, it is shown that development density and the cost of remediation significantly affect the number of years required for the VKT cost savings to offset the remediation cost. Mashayekh, Hendrickson and Matthews (2012). The reasons given by both public and private-sector stakeholders in Toronto, for remediating and redeveloping these sites range considerably. Some of the key benefits pinpointed include reducing development pressure on Greenfield sites, decreasing risks to public health and safety, restoring former landscapes, renewing urban cores, counteracting negative social stigmas associated with such sites, restoring the tax base of local government, and increasing the utilization of existing municipal services (De Sousa, 2000, 2001, 2002; Ontario Ministry of the Environment, 1996). Meanwhile, despite the positive side of the strategy, there is a range of challenges that complicates Brownfield redevelopment as a strategy. Lauren (2006) asserts that, Developers are often hesitant to take on Brownfield because of issues of actual or perceived contamination, concerns about liability, and the cost of cleanup. (Lauren 2006). Paul Syms, (1999) noted that, many Brownfield sites are small in size, requiring the assembly of a number of sites, in different ownerships, in order to have a viable development project and

they may also be plagued with problems such as inadequate access and obsolete services. In support of this view Simons (2006) submitted Land assemblage and acquisition and the current development pattern are barriers to developing large infill projects. It is difficult to assemble and acquire enough land to do cost-effective infill development, due to the number of properties that need to be combined. Despite such perceivable benefits earlier identified, it is surprising to note that management and redevelopment of Brownfield sites in Toronto continues to be envisioned as largely a private-sector responsibility, with provincial and municipal governments playing only regulatory and advisory roles (De Sousa, 2001; Ontario Ministry of the Environment, 1996).

Study Area

Ilorin is the capital of Kwara State. It is located on latitude $8^{\circ} 31'N$ and $4^{\circ} 35'E$ and longitude $4^{\circ} 57'N$ and $8^{\circ} 52'W$ with an area of about $100km^2$ squares (Kwara state Diary, 2007). For administrative purposes, it is divided into Ilorin town council (West), Ilorin East and Ilorin South. Magaji Are Ward I is one of the sixteen Wards in Ilorin East L.G.A., situated at the Southern border of Ilorin East and the Northern boundary of Ilorin West L.G.A see fig 1-4.

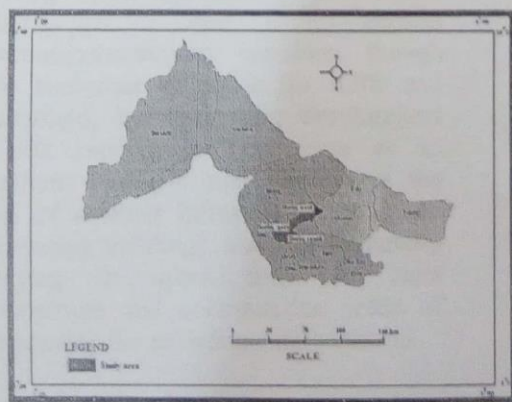


Fig 1: Kwara state showing the L.G.As
Source: KWSG (1997)



Fig 2: Ilorin East L.G.A and the case study
Source: Jimoh, Asonibare and Issaet(2013)

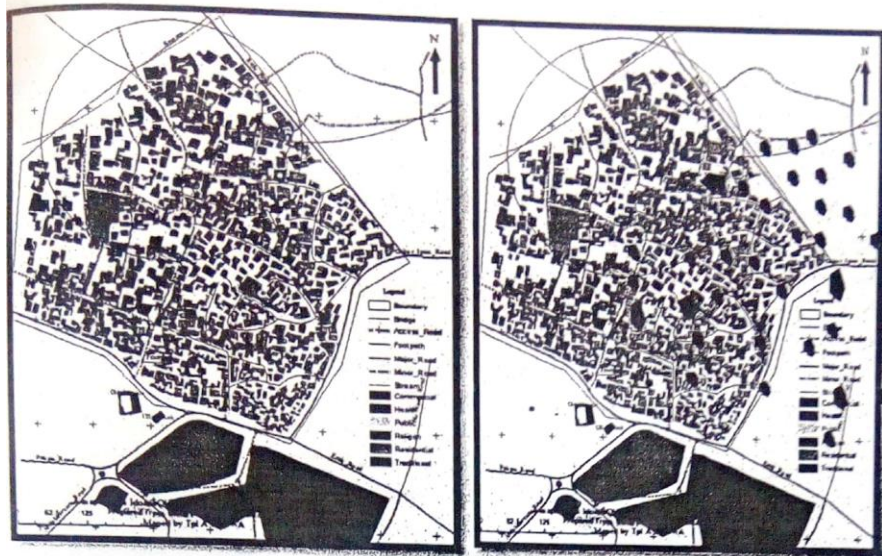


Fig. 3: Magaji Are Ward I of Ilorin Fig. 4: Brownfield location within the study area (as at date)

Most of the Brownfield sites in the study area offer most of the infill development opportunities. Ilorin Township like many Nigerian large cities and towns have un-operated land use master plans and active zoning regulations. The development pattern in Magaji-Are Ward I is primarily of high density residential neighbourhood with commercial nucleus development, radiating out from the south-west, making the neighbourhood a congested and environmentally challenging one. The neighbourhood has unplanned mixed-use buildings and development characterized by inadequate infrastructure and basic utilities, health and other facilities, poor building and general environmental/sanitary condition, though with numerous potential for infill and Brownfield, by redirecting development towards existing built-up areas as an important principle that encourages the reuse of existing infrastructure, adapting and reusing buildings, and more generally engaging in urban infill to meet development and communities needs of ameliorating the environmental situation.

Methodology

This study is based on the information gathered through fieldwork in 2012 through the administration of questionnaires to residents and complemented by reconnaissance survey. The questions are based on the background and other relevant information about the study. Gathered from field with 461 questionnaires are information regarding the opinions of respondents on the desirability of Brownfield redevelopment, as relates to their associated opportunities and the characteristics of the identified Brownfield. The readiness of the owners to release for public or commercial use was also investigated through the administration of 80 questionnaires. On the other hand, secondary information were also gathered from journals, text, reports and other relevant published materials regarding the theories that surround Brownfield redevelopment. Stratified systematic sampling method was employed to obtain a reasonable degree of representation. The estimated population size of the study area as obtained from the National Population Commission record as projected from the 2006 Census figure. Sample size was determined

employing $n = \frac{z^2 p q}{d^2}$ with the degree of accuracy desired and other relevant desirability, with standard normal deviate at 2.0 (95% confidence level) and $P=0.50$ (the proportion in the targeted population estimate having particular characteristic) and 1.0 P is the q in the formula. Meanwhile the degree of accuracy was set at 0.05. With compensating non response estimated at 80% response rate using, $n_s = \frac{n}{0.8}$ this gives a total sample size of 500. The first element of the group were selected at random (random start), this is done by selecting a random number between the first and third of both elements and balloted. The data collected were analyzed using descriptive statistics while residents' opinions were subjected to a five point 'Linkert Scales'.

Results and Discussion

Going by the definition of Brownfield by USEPA and HUD (2001) and the

Table 1: Types and characteristics of Brownfield in the Area

Type	Number	Average Yrs. Of existence	Average size (M ²)	Current use					
				Waste dump		□ Other uses		Unused	
Abandoned uncompleted building	61	19	500	36	59.0%	16	26.2%	9	14.8%
Formerly occupied residential buildings	27	15	208	-	-	21	78%	6	22%
Manufacturing or warehousing facilities	11	11	85	-	-	2	18%	9	82%
Railroad yards	Nil	-	Nil	-	-	-	-	-	-
Commercial properties	1	9	350	-	-	-	-	1	100%
Gas/filling stations	Nil	-	Nil	-	-	-	-	-	-
Sawmills	Nil	-	Nil	-	-	-	-	-	-
Open space	2	22	450	-	-	2	100%	-	-
Open dump sites	19	28	480	19	100%	-	-	-	-
Other open spaces (back yard)	39	undated	400	18	46.1%	21	53.9%	-	-

□ Other uses (burial ground, destitute occupation, hoodlum occupation)

Source: Authors' Field Survey, 2012

The study further reveals that, more than 4 out of 5 formally occupied residential buildings that are in the state of dilapidation, absolute disrepair and inhabitable are also currently playing host to unidentified hoodlums and destitute. In

extension of its scope as earlier suggested in this paper, quite a number of structures could be identified in the area, each occupying an average of between 350-400 metres square scattered around the area (see Table 1). Unfortunately the untapped resource (Brownfield) rather than being harnessed to help improve the environmental and public health of the residents, they end up liabilities. Table 1 indicates that uncompleted and abandoned buildings in the area have assumed the present state in an average of 19 years. About three out of every five (59%) of them are already converted to waste dumps (solid and liquid) while about 26% are currently used for other purposes such as hoodlum and destitute occupation and about 15 % are left unused. The development made them unsafe and unhealthy due to their stinking, unpleasant, contamination and other threats they constitute to the inhabitants.

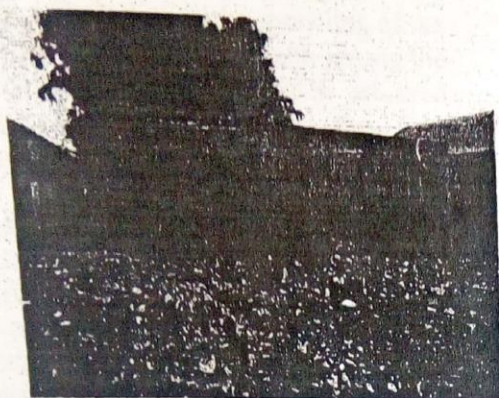
a similar development, 100% of the identified open spaces that have existed for about 2 decades are currently assuming the status of burial ground. A similar scenario also reflected in the case of backyard

spaces that are traditionally used as burial grounds from time immemorial.

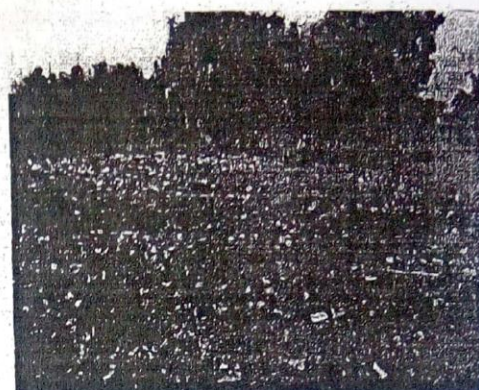
Desirability of Brownfield redevelopment

The level of acceptance on the desirability of the phenomenon was measured by subjecting to a five point 'Linkert Scales'

the opinions of the residents' degree of agreement on the various potentials benefits of Brownfield redevelopment in Magaji Are Ward I. The findings reveal as shown in table 2 that about 50% of inhabitants strongly agreed that the redevelopment



Plates 1: Sample of Brownfield



Plates 2: Sample of Brownfield

Table 2: Opinion of residents on the desirability of Brownfield redevelopment and reuse.

	Strongly Agreed		Agreed		Neutral		Disagree		Strongly Disagree	
	No	%	No	%	No	%	No	%	No	%
Better environmental quality	230	49.9	100	21.7	68	14.8	23	5	40	8.7
Job creation	210	45.6	112	24.3	71	14.4	21	4.6	47	10.2
Better public health	90	19.5	200	43.4	90	19.5	60	13.0	21	4.6
Higher Revenue	59	12.8	71	15.4	61	13.2	180	39.1	90	19.5
Reduced urban sprawl	10	2.2	180	39.1	71	15.4	90	19.5	110	2.9
Reducing automobile use	10	2.2	35	7.6	126	27.3	161	34.9	129	27.9
New business activity	39	8.5	61	13.2	83	18.0	209	58.4	71	15.4
New business potential for lending institutions	20	4.4	60	13.0	63	13.7	241	52.3	67	14.5
Financial returns on dormant properties	86	18.7	176	38.2	93	20.2	47	10.2	59	12.8
Access to untapped consumer markets	20	4.4	36	7.8	61	13.2	166	36	78	16.9
Moderately priced labor force	103	22.3	201	43.6	67	14.5	40	8.7	50	10.9
Increased private-sector investment	130	28.2	58	12.6	91	19.7	54	11.7	128	27.8

Source: Authors' Field Survey (2012)

will create a better environmental quality while 5% and 8.7% respectively disagreed and strongly disagreed on same. On the other hand about 70% agreed (though in varying intensities) that Brownfield redevelopment is capable of creating jobs

in the firms that remediate the site while slightly above 16% did not agree to same submission. When considered the potential of the sites to create new businesses in and around its location after redevelopment, almost 2 out of every 3 respondents

(58.4%) disagreed and about 15.4% are of strong disagreement that to its potentials of creating new businesses. On the contrary, 22.3% are of the strong agreement while 43% agreed that, if the identified Brownfield sites are developed, they will create a moderately priced labor force but about 14.5% are indifferent to this position. Reduction in the sprawling of the town and a better public health among the inhabitants are agreed would be achieved when these contaminated sites are remediated. see table 2.

Expected Challenges with Brownfield redevelopment in the study area

Difficulties in the Land assemblage and acquisition in the current development pattern has been identified to be a major barrier to developing this concept. It was established that quite a reasonable proportion of the identified Brownfield sites are jointly owned by multiple nuclear families. To assemble such and enough land for a cost effective infill development will be a serious challenge as most Brownfield sites are also scattered around in small sizes. This will be difficult due to: (a) the number of them need to be combined to get the desirable size for development; and/or (b) in a multiple owned Brownfield site, conflicts of interest may arise as one or more owners may be unwilling to sell or sell at a cost-effective price, because sometimes, property owners may have high expectations of property values while others may even be unwilling to let go.

Obtaining finance is another identified difficulty because of high (unattractive) compound annual interest rate of commercial banks loan which in most cases is above 20% as revealed by personal interview with some bank officers. Meanwhile, both Federal Mortgage Bank of Nigeria and the newly transformed Infrastructure Bank do not have clear mandates to invest in such a non familiar (Brownfield) sector of urban setting. Another side to the financial

challenges is that most commercial banks are not "community-based" administratively but rather, operating a centrally controlled policies, so community-based project of such might not receive priority attention as the approving authority have little or no stake regarding the project location.

Neighborhood/individual Brownfield site owners' opposed to the release and outright sales of their sites. The study reveals that out 80 owners interviewed about 65% of the owners opposed the outright sales or release of their properties for any purpose. See appendix 1. When probed further for the reasons for the opposition, it's born out of fear of unknown especially of the potential outcome of the concept, the procedural details of it and simply the fear of change. The study further reveals when preferable options were asked, that 45% of owners opted and suggested the Build Operate and Transfer (BOT) concept of redevelopment and about 21% of them opted for the partnership on 70/30 equity ownership in favor of the original owner. On the contrary, about 11. % was vehement on the total rejection of redevelopment concept. While 16.25% accepted to the redevelopment concept with the conditions that the payment for the purchase/acquisition will be made before the commencement of the project and another 6.25% also considered the idea acceptable, provided the quality of the environment would be upgraded and the inhabitants will have access to more and better infrastructures. See appendix 2.

Conclusion and Recommendations

Magaji Are Ward I has overwhelming evidence of an existence of numerous untapped Brownfield resources for infill land development that is capable of creating a turnaround in the area of employment generation (for both skilled and productive population and unskilled labour), improve environmental and economic health among other benefits for

area residents and the general public. There is no doubt in the desirability and acceptability of redeveloping the identified Brownfield in the study area provided the earlier identified conditions are attended to and the under listed recommendations are employed.

The creation of a "Brownfield/infill Development Unit" within the Development Control Department of Kwara State Town Planning and Development Authority is considered strategic to identifying, redevelopment and the management process. This should be replicated for Brownfield sites in the core sector of major towns in the state and later be replicated in other states of the country. This will not only enhance a smarter development, but also create a greener, safer and more attractive inner city to live in, and most importantly militate against the unsustainable sprawling nature of our cities. Moreover, there is the need to seek private developers' involvement in the initiative and governments to provide the incentives to facilitate the involvement of all stakeholders (community, investors and site owners) early enough in the redevelopment process. It is therefore strongly recommended that local government should drive and coordinate the process. This will be through the various elected officers with continuous local town hall/wardenlightenment sessions. The elected officials on the other hand will be educated on the benefits, process and their strategic role as the concept success prerequisite. On the other hand they guide process in understanding the cultural psyche of the community to foster the understanding of the factors that can mar the ideas and its acceptability. The Creation of a 'Community Development Fund' that can be used as a revolving fund for sites assemblage for development will resolve the challenge of fund sourcing. Such fund should be jointly contributed and managed by both State and Local governments, payable from returns on investment at an attractive rate of 5% over

a period of ten years by the developer or investors. While recommending the review of the mandates of both FMBN and Bank of Infrastructure of Nigeria to accommodate and prioritize the investment in Brownfield sector of our urban core, proper education for policy redirection of Commercial Bank on same for an attractive (single digit) interest rate on urban infrastructure development projects is long overdue. It is also important to note that the adoption of the concept of Build Operate and Transfer on an equity bases between Developers and the land owners will promote community involvement and public confidence for a resultant acceptability of the strategic initiative. This in the long run will facilitate the overall goal of conserving our prime Greenfield in the fringe/rural suburb, that is alarmingly loss primarily to residential and other anthropogenic development. This will also give a pride of place to the inhabitants of the inner city by stemming the negative externalities associated with living amidst Brownfield sites.

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Appendix 1: Brownfield Ownerships' Readiness for Outright Sales or Release

Readiness	No	%
Willing	17	21
Unwilling	52	65
Indifference	11	14
Total	80	100

Appendix 2: Owners' Recommended options for Brownfield Redevelopment

Options	No	%
Build, Operate & Transfer	36	45
Partnership	17	21.25
Total Rejection	9	11.25
Acceptance conditions with	18	22.5
Total	80	100