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Exploring barriers to land accessibility for low-income housing delivery: A case of buffers of open space on the mining belt between Johannesburg CBD and Soweto

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2007-02-22T12:39:55Z
http://hdl.handle.net/10539/2088

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CHAPTER THREE

RESEARCH METHODS AND DATA COLLECTION

3.1. Introduction

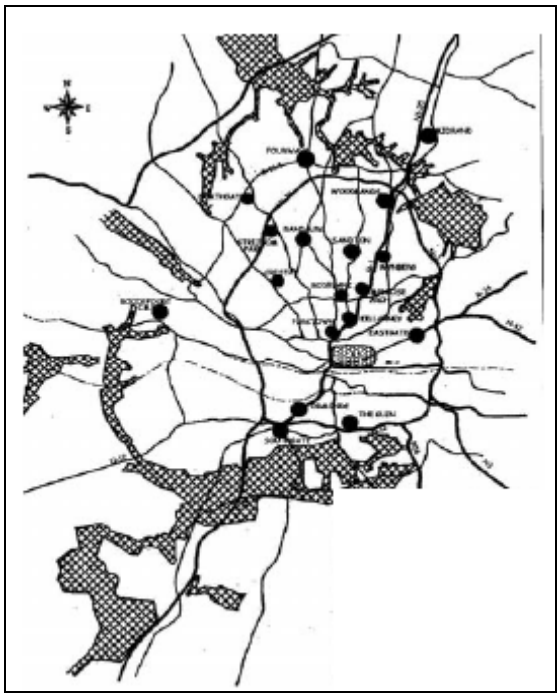
This chapter outlines the research methods used in this study and also present the data gathered and its usefulness to the study. The gathered data as presented in this chapter were produced by means of 216 non-random surveys that I, together with students attending the course TRPL 533 -a required course in their Master of Science in Development Planning- conducted. Analysis of documents such as the National Nuclear Regulator (NNR)'s regulations and policy on development of property on former mining (contaminated) land, the Environment Conservation Act of 1989 and the Performance Plan 2005-2006 of the Gauteng Provincial Housing Department, where focus was on the 2004 Progress Report, will be undertaken. The point of interest in these documents was the issue of land accessibility for the construction of affordable housing, which happens to be the main focal point in this research report.

This chapter attempts to provide information to the main question of the study which seeks to establish possible barriers inhibiting the construction of affordable housing on former mining lands. It does this by concentrating specifically on the risk-taking questions on page 3 of the survey instrument, and scenario-based questions on pages 4 and 5 of the same instrument (see Appendix 1). The rest of the data are provided by analysis of the above-mentioned documents.

3.2. **The study area**

The study area is located between Johannesburg and Soweto, as already mentioned in chapter one. It is a well-located area south of Johannesburg and north of Soweto. This is an area which is comprised of mining dump lands, which remain largely unoccupied and some parts being commercial. Johannesburg has unevenly distributed open spaces, as depicted by map - 4 below, which are usually vulnerable to illegal dumping and invasions leading to the mushrooming of informal settlements. The study area is not only contaminated by radioactive materials

Map-4: Open spaces in Johannesburg



Source: www.joburg.org.za

such as radon and uranium, but it also has mining dumps which constantly blow off mine dust around, which has a serious health risk to neighbouring communities since it can cause diseases such as respiratory difficulties. These former mining lands are well-located closer to the CBD and residents of this area can have access to economic, health and educational opportunities as well as better service delivery by virtue of their proximity closer to the CBD. Another plus factor for these mining dump lands is their location within an area which has well-established sewerage, transport, water and road systems. Accessing the CBD for work and shopping from this area will be easier and residents will save travelling time and money as compared to Soweto residents. However, this is a contaminated area which is human unfriendly and poses serious health risks to residents if not well cleaned of mining dumps and radioactive materials. It is therefore crucial for Safety Standards and Regulations Practices as required by the NNR to be thoroughly adhered to in remedying and cleaning this area in order to be approved by the NNR for housing construction and become a user- friendly environment.

3.3. **Research methods**

This is an exploratory type of a case study, which sought to collect both quantitative and qualitative nature of data in that data collected through surveys dealt to a large extent with numbers and figures, while on the other hand document analysis utilized a qualitative way of data collection analysis, as already explained in chapter one above.

The data as presented in this chapter was obtained by making use of questionnaires (surveys) and document analysis as research methods. Surveys were used in order to get more detailed information in this study, and also the fact that surveys are one of the most

used research methods in collecting data on different issues and especially on opinions. Since our surveys included finding out the opinions of potential housing beneficiaries on housing constructed on contaminated land, surveys were indeed the right method. The surveys, especially the scenarios on pages 4 and 5 of the survey instrument, provide clearer data on the question of possible barriers which this study sought to explore. Document analysis was used in order to complement and provide answers to other research questions not answered by surveys (See Appendix 2). The survey instrument – which was developed by the project leaders, Prof. Robert Simons and Dr. Aly Karam, with inputs from some interviewers and the focus group- led to the gathering of detailed data than document analysis, some of which are presented in this chapter.

These research methods were used in order to provide answers to the main question of the study, which was: **What are barriers inhibiting the accessibility of former mining lands for the construction of low-income housing?** Attached to this main question, were the following sub-questions: What difficulties are likely to discourage potential low income housing beneficiaries from preferring housing on former mining lands? What health risks or dangers are posed by housing on former mining lands? What are best possible ways of improving access to well-located former mining lands for low-income housing delivery? Data presented by the scenarios (Appendix 3.8) of the surveys provides factors such as radon and mine dust, which are responsible for the decrease in bidding for property on contaminated land, which also act as barriers to people or developers wanting to utilize or access former mining lands for housing devilment.

After collection of raw data by means of surveys, the next step was to do coding of this data using a computer set. Coding was followed by cleaning and sorting of data according to its relevance and similarities, by making use of a data-sorting computer

programme or technique. The next step was to tabulate data into tables as shown in this chapter. Data collected through document analysis was manually analyzed (hand written) by sorting out data according to its similarities and frequencies (of responses given).

3.3.1. **Surveys (Questionnaires)**

Survey data was collected on various variables and in my study of the barriers to land accessibility, attention was only paid on relevant sections of the surveys such as the scenarios. It is vital to indicate that the survey was a non-random sampling of the population of the potential housing beneficiaries of the Greater Johannesburg Municipality, since interviewees were carefully selected given the sensitivity of questions raised in the survey instrument. Walking into any community would not only have been risky but too dangerous as well. It is for that reason that we had to seek assistance from ward councillors who organised interviewees for us. People making a monthly income of R2500 up to more than R7500 were our target group in the surveys, for the sake of affordability of the targeted housing on former mining lands, and this group fairly represented our target population which was low to middle income group. Reaching the interviewees would have been very difficult had it not been the assistance of councillors. The survey areas were selected with fair representation of the population in mind, namely, Orange Farm, which is situated about 40 km south of Johannesburg and representing the lower-income community; Orlando East, which is an old township established as far back as 1931, which represent the upper-low to low-middle income community; and Southgate and Eastgate malls which are often frequented by all income groups. The Eastgate mall was used in order to test the difference between it and the

Southgate mall in terms of the frequency of different income groups, and no difference was found. Southgate mall was chosen because it is frequented by people from the south of Johannesburg, which includes Orlando East Another reason for choosing the shopping malls was to target groups with the expected levels of income, which we found to be below what we expected in some community members during our surveys in townships. There were few surveys conducted in Braamfontein for those workers commuting daily between Soweto and the CBD. Ward Coucillors of Orange Farm and Orlando West assisted in organizing the respondents in their wards, and for Eastgate and Southgate malls, access was negotiated through the managements. At the end a total of 216 surveys were conducted, as seen in table -1 below.

The survey findings should be trusted and acceptable because attempts to ensure that standard research protocols and formalities were adhered to, were made, such as identifying interviewees and the focus group, acquiring permission to conduct interviewees, pre-testing the survey instrument, training interviewers, taking ethical consideration into serious cognizance, etc. This was a face to face type of surveys conducted by a total of 18 students plus two supervisors, Dr Aly Karam and Prof. Robert Simons. The focus group assisted in clarifying some of the questions in the survey instrument, modification and improvement of the instrument itself. It also assisted in determining the duration of each survey, which was about 30 minutes. The focus group was very helpful in improving the survey instrument in that they asked a lot of questions and raised concerns unreservedly during the discussion of the survey instrument. Their feedback was really helpful.

Table - 1. The areas in Johannesburg in which surveys were conducted

Place of survey	No. of surveys	%
Braamfontein	9	4.2%
Eastgate Mall	31	14.4%
Orlando East	41	19.0%
Orange Farm	30	13.9%
Southgate	105	48.6%
TOTAL	**216**	**100.0%**

Source: Simons et al.

Although the language of the survey was English, which is the most spoken second language in South Africa (Statistics South Africa, 2001), proper arrangements were made to ensure that almost all eleven official languages spoken by the respondents were represented within the interviewing team, specifically for those who couldn't understand English. A total of 64.4% English speakers took part in the surveys against the fact that only 11% English speakers available in the South of Johannesburg (Census, 2001).

3.3.1.1. **Researchers and respondents**

As indicated in the above paragraph, a total of 18 (14 TRPL students plus 4 trained masters students who formed part of the research team) were responsible for conducting the surveys, under the supervision of Prof. Robert Simons and Dr. Aly Karam of the Wits

school of Architecture and Planning. Two masters students, David Mokoena and Hlengani Baloyi (myself) were given the task of field supervision. In total 216 respondents were interviewed, and their ages, (see appendix 3.5) ranged from 20 to 70 years.

Appendix 3.7 shows that about 30% of the interviewed respondents earn more than R7500.00 per month, while 26% earn less than R2500.00. The majority of the respondents to this question (income question) fell within two categories, viz. less than R2500.00 and more than R7500.00, which is not representative of the general population of communities south of Johannesburg, where according to Census data (2001), the average monthly income is between R3200.00 and R6400.00.

3.3.1.2. **Data Presentation**

- **Risks that respondents were willing to avoid**

It is important to indicate that during the surveys conducted in Orlando East, there was wind blowing, which blew mine dust towards the area. At the same time, water contamination, which caused cholera in Delmas, Mpumalanga, was being reported on both print and electronic media. These incidences could have an influence on responses given by respondents that day, specifically on risk-taking questions. This might be the reason water contamination came up as the most worrying risk factor to take by respondents, as shown by Table 2 hereunder, because the water contamination crisis in Delmas was still fresh in people's minds. . Risks related to housing on contaminated land such as breathing problems from blowing mine dust, and radon and small cancer risks in

20 years time, came at number 3 and 6 respectively, as seen in the next table. One can see that people's perception is affected by being close to mine dumps.

Table 2. **Willingness to take risks among the respondents**

1	1.31	Getting very sick from contaminated water
2	1.37	Getting HIV/AIDS, dying in 10 years
3	1.44	**Breathing problems from blowing mine dust**
4	1.54	Getting tuberculosis (TB), being weak and sick
5	1.62	Dolomite soils/house collapsing in hole
6	1.65	**Radon and small cancer risk in 20 years**
7	1.68	Driving on bald tyres and having a car smash
8	1.78	Smoking cigarettes and cancer risk in 20 years
9	1.80	Riding in a taxi, maybe having accident

Source: Simons et al

- **Data from scenario-based questions**

As already indicated, scenario-based questions provided answers about some of the possible barriers or risks responsible for inhibiting potential housing beneficiaries from owning affordable housing, constructed on former mining lands. Research results of the four scenarios found in pages 4 and 5 of the survey instrument, see appendix 3.8.

What is most crucial from these scenario-findings is the bid percentage each scenario gets from respondents, where Scenario A has 95%, Scenario B got 87%, Scenario C has 73%, while 69% of respondents provided a bid for Scenario D. The scenarios provide valuable findings which indicate factors influencing the willingness and unwillingness of respondents to occupy housing on contaminated lands. These factors assist in exposing actual barriers inhibiting or discouraging people from opting for housing on former mining lands. The bids indicate a decrease in potential beneficiaries' interest for housing on former mining lands, which is influenced, by amongst others, people's perception of former mining lands as discussed in chapter two. However, overall results of the bids clearly indicate that the majority of the respondents are willing, despite the health risks, to stay in housing constructed on former mining lands.

Survey results, in short, show radon and mine dust as some of the notable barriers which inhibit and discourage access to mining dump lands for the construction of low-income housing.

3.3.2. **Document analysis**

3.3.2.1. **Performance Plan 2005-2006 of the Gauteng Provincial Housing Department**

In this document, the Provincial Housing Department outlines its strategic plan for 2005-2006, and also gives a progress report of the previous year (2004). This document mentions the different programmes that the Department is engaged in such as Housing

Planning and research, Housing Performance/Subsidy Programmes, Urban Renewal and Human Settlement Redevelopment and Housing asset Management, amongst others.

Amongst some of the challenges faced in the carrying out of the above-mentioned programmes, this document emphasizes the difficulty of purchasing private land for the construction of affordable housing for the houseless people of this province. According to this document, acquiring private land is complicated by the long duration that it takes for land to be released, and for that reason, only about 3% of land has been redistributed by June 2005 (Tang, 2006), since the beginning of land processes more than a decade ago. The possible manipulation of land prices by landowners is another stumbling block to accessing land (Mbeki, 2006). The fact that provincial departments have no mandate to purchase private land, except doing it through municipalities, is another difficulty in acquiring land for housing construction. Acquiring adequate funding for subsidies is another challenge faced in unfolding these programmes. Lack of land, owing to exorbitant prices of land, seems to be the main problem frustrating almost all the programmes dealing with construction of housing. All these barriers are actually the findings of the analysis of the Report on the Performance of Gauteng Provincial Housing Department, as mentioned above.

3.3.2.2. **The Environment Conservation Act, no. 73 of 1989**.

This act deals with issues of cost of mitigation, bioaccumulation in crops, risk-based corrective action health risks, potential exposure levels, etc, which need to be taken into consideration when dealing with development on former mining lands. In terms of Section 21 of this Act, an Environmental Planning and Impact Assessment is a serious

requirement before any development can be done on former mining land. It is necessary to indicate that the study area (former mining land) is a zoned mining, without any development rights or urban zoning development. Property development on this site, according to this Act, can only take place once environmental clearances have been granted, with land use applications done to the Johannesburg Planning Authority.

3.3.2.3. **National Nuclear Regulator Act, No. 47 of 1999 and Regulations on Safety Safety Standards and Regulatory Practices**

The two statutes mentioned above deal, amongst others, with regulations and policy on housing construction on contaminated land. It is crucial to indicate that the National Nuclear Regulator (NNR) – which is a statutory body which regulates nuclear activities for the protection of the public, property and environment against nuclear damage- was established by the National Nuclear Regulator Act, NO.47 of 1999. The Regulations on Safety Standards and Regulatory Practices document was also published in accordance with the provisions of Section 36 and 47(3) of the National Nuclear Act of 1999, promulgated by the Minerals and Energy Department.

These two statutes expose some of the possible barriers inhibiting access to former mining (contaminated) land, for the construction of affordable or low-income housing, namely, radioactive materials (gases) such as uranium and radon, which are highly toxic and contaminating (former) mining lands. These two statutes (documents) prescribe the required levels of these radioactive materials on housing construction sites and the penalties to be meted out on those who violate these statutes.

The fact that mining dumps on former mining lands contain radon, which is formed by uranium decay, as seen in Appendix 4, is alone a serious barrier to accessing mining land for affordable housing construction.

In terms of Section 2 (2.1.1.1) of the Regulations on Safety Standards and Regulatory Practices, the following are the required levels of radioactive concentration of radioactive material:

- for all radioactive materials of uranium and thorium and their progency except radon: 0.5 Bq per gram
- for potassium -40: 5 Bq per gram
- for radon -222 in homes: 400 Bq per cubic metre

In terms of sub-section 2.1.1.2, the level of total radioactive content below which provisions of the Act (National Nuclear Regulator Act of 1999) do not apply is 1000 Bq. For radon concentrations in mining and non-mining areas, see Appendix 4; The above levels are in accordance with Section 2(2) of the National Nuclear Regulator Act, which states that the Act does not apply to any action where the radioactivity concentrations of individual radioactive materials, or the total radioactivity content, are below the exclusion levels provided for in the Safety Standards contemplated in Section 36 (of the Act). In terms of sub-section 2.2.1.3 of the Safety Standards and Regulatory

Practices, the action concerned, in this regard, the construction of affordable housing on contaminated land, must be inherently safe, with no likelihood of scenarios that could result in the requirements set out in 2.1.1.1 (as outlined above) being exceeded. Section

4.12 f the Safety Standards and regulatory Practices, states that exposure to radon should not exceed an action level of 6 mSv/a.

With regard to housing on contaminated land (site), Section 5(5.4.1) states that sites used in the conduct of authorized actions may be used for unrestricted use provided that it is demonstrated that radioactive contamination and radioactive materials which can reasonably be attributed to the regulated action have been removed from the site or, in the case of naturally occurring radioactive materials (nuclides), that the activity concentration are below the exclusion levels specified in Section 2. There are, however, situations where a complete removal of radioactive contamination and radioactive materials won't be possible, and in that event, according to sub-section 5.4.2, release for use is allowed subject to any restrictions specified by the Regulator, provided it can be demonstrated that remedial measures have been taken to achieve an optimal level of safety, amongst others.

It is important to indicate that the NNR intends dealing harshly with those who contravene this Act, as stated in section 52(2) that anyone who contravenes or fails to comply with any provision of this Act or any condition, notice, order, instruction, directive, prohibition, authorization, etc. is guilty of an offence, which is punishable by fine or imprisonment, the maximum of which is ten years.

The analysis of the above documents clearly indicate the way in which the NNR contributes towards making it very difficult for former mining land to be accessible for the construction of affordable housing. Notwithstanding the fact that the NNR regulates

and promotes the safe use of contaminated land for the benefit of citizens in general, the nature of its policies sound unfriendly and uncompromising to such an extent that it ends up frustrating attempts to construct housing on former mining lands. Radon and mining dust thus become the two outstanding findings of document analysis, and it is upon these finings that the NNR capitalizes for its non-cooperative nature in approving the utilization of contaminated land for housing.

It is also vital to indicate that banking institutions are reluctant to finance low-income housing because they not trust low-income groups to service their loans without reneging. Although the government and the banking institutions signed a memorandum of understanding in 2005, which saw the banks promising R42 billion towards low-income housing development, the fear by the banks that low-income groups may not repay their loans is the main reason for the existence of a dispute between the two parties at present. It is for that reason that the State President Thabo Mbeki made a call during his Sate of the Nation Address for the Ministry of Housing and the banks to reach an amicable settlement so that the R42 billion can be made available for the development of low-income housing without any further delay.

3.4. **Conclusion**

The findings of this study as presented in this chapter, just like any other research findings, are solution-seeking attempts aimed at general life improvement. These findings are a direct onslaught on inadequate housing and unavailability of land for housing construction closer to the CBD, for the previously excluded and isolated citizens of this

country. These results attempt to make a meaningful contribution towards exposing real possible factors acting as barriers against urban redevelopment, densification, human resettlement and integrating those previously sidelined from city life, into the city, amongst others. Two hundred and sixteen respondents is a significant number, and one can confidently draw a reliable conclusion based on responses from such a big number of respondents. An indication by these results that majority of the respondents are actually interested in owning or staying in houses constructed on former mining land, is not only an indication of the seriousness of unavailability of land closer to the cities, but it is also a challenge to the government, private land owners (mining land owners in the case of the land studied here), non-governmental organizations, property developers, NNR and other interested formations, to soberly and seriously start thinking about the challenge of developing affordable housing on former mining lands.

Some of the challenges to housing on former mining lands, such as the toxic, cancer-causing radon and TB-causing mine dust, exposed by these findings, as well as exorbitant price tags put on private land being sold, are some of the highlighted barriers of this research project. The use of two research methods in this project was in itself triangulation of the findings, which in turn improves reliability and trustworthiness of such findings.