

3 METHODOLOGY

3.1 INTRODUCTION

Research methodology is defined as the total strategy, from the identification of the problem, to the final plans for gathering data and analysis (Burns & Grove 2001:223). It necessitates a reflection on the planning, structuring and execution of the research in order to comply with the demands of truth, objectivity and validity (Brynard & Hanekom 2006:36).

This chapter describes the research design and methodology used in this study including population, data collection and testing thereof to ensure reliability of the data.

The purpose of the research is to explore and describe the critical success factors within the township establishment process.

3.2 RESEARCH DESIGN

Research design is defined as the blue print for conducting a study that has clearly defined structures within which the study is implemented (Burns & Grove 2001:223). The research design is predominantly determined by the research question and, as such the investigation will result in a complete comprehension of the topic being studied.

This research will be qualitative, descriptive and exploratory in design, attempting to capture both the complexity and the critical success factors within the township establishment process.

Through qualitative research the researcher is attempting to draw off the experience of various property developers, civil engineers and project managers during the township establishment process. According to Brynard & Hanekom (2006:37) qualitative research focuses on the real-life experiences of people. This approach will enable the researcher to engage the test subjects through in-depth and unstructured interviews to experience

through their eyes what the critical success factors are within the township establishment process.

Exploratory research is defined by Burns and Grove (2001:374) as research conducted to gain new insights and to increase knowledge regarding the topic investigated. This study attempts to explore the insights of property developers, civil engineers and project managers as to what the critical success factors are within the township establishment process through the process of the Town-planning and Township Ordinance 15 of 1986.

Descriptive research involves a detailed observation and analysis of the topic under investigation. Descriptive research is used to document the observations in real situations with the aim to understand how the various activities within the township establishment process relate to, and interact with on another. A descriptive research is interpretative resulting in an in-depth and complete understanding and description of respondent's experience in order to explain the critical success factors to the process of township establishment.

3.3 SAMPLING

Qualitative research usually focuses on a small sample of people as stated by Brynard and Hanekom (2006:54) "Sampling is a technique employed to select a small group (the sample) with a view to determining the characteristics of a large group (the population)". The sample size is not as important as the analysis and the availability of sufficient information (Miles & Huberman 1994:27).

Therefore the sampling criteria for this study are based on the characteristics essential to the membership of the target population. For this study the inclusion criteria were:

- The participant must have completed at least two or more township developments
- The participants must have at least five or more years of experience within their professions to enable the researcher to extract the critical success factors from each discipline.
- The participants should have had exposure to the township establishment process in terms of the Town-planning and Township Ordinance 15 of 1986
- The participants must be willing to participate in this study

3.3.1 Target population

According to Brynard and Hanekom (2006:55) a population refers to group in the universe as those who conform to a set of specifications. Welman and Kruger (1999: 18; 49) defines a population as a complete group of entities sharing some common characteristic. Therefore the population selected will consist of property developers, engineers, town planners and project managers who have more than five years of experience within the township establishment process in terms of the Town-planning and Township Ordinance 15 of 1986. The researcher is attempting to gather a collective view in terms of what the critical success factors are and whether a relationship exists among the different professions in terms of what these factors are and the impact thereof on the property development process.

3.3.2 Sampling method

A sample is a subset of a population selected to participate in the study (Polit & Beck 2004:731). The sample is part of the target population that can be used to obtain the required data (Welman & Kruger 1999:46). A purposive sampling method is used which requires selecting participants who are knowledgeable about the topic in discussion, because of their involvement and experience within the process (Brink 1996:141). Therefore the purposive sampling method will best suite the researcher to understand the township establishment process and the research question.

The researcher will contact property developers, town planners, engineers and project managers within the Gauteng region.

3.3.3 Sample size

The sample size selected for this study consist of five property developers, town planners, engineers and project managers who were selected based on their knowledge, experience and willingness to participate in this study.

3.4 DATA COLLECTION

Burns and Grove (2001:49) define data collection as “the precise systematic gathering of information relevant to specific research objectives or questions”. According to Burns and Grove (2001:50) data can be collected in several ways, but which ever instrument is selected, the research objectives must be accomplished by the instrument used.

Unstructured interviews with the aid of questionnaires will be used to gather information for this study.

3.4.1 Instrument

The researcher has used unstructured, in-depth face-to-face interviews as the primary tool for gathering data for this study. This method of data collection allowed the participant with the opportunity to share their own experiences and perceptions regarding what they regard as the critical success factors within the township establishment process. The researcher is also of the opinion that interviews are the best way of exploring different avenues within the township establishment process to develop a deeper and richer understanding of the process.

According to Brynard and Hanekom (2006:46) interviews have the following advantage and disadvantages:

Advantages:

- Interviews allow the interviewer to explain matters that are unclear to the participant.
- Allows the researcher to clarify ambiguous answers by the participant.
- Allows for in-depth questions that results in a deeper and richer understanding of the topic researched.
- Allows for the exploration of different avenues within the process.
- Allows the participant to freely communicate his or her perceptions and experience to the researcher.

Disadvantages:

- Participant might fear to commit themselves to telling the truth.
- Time consuming.

- Geographical limitations.
- Response may be bias.

The questionnaire formulated was used to guide and facilitate the researcher within the interviewing process. The questionnaire was structured by the research problem and objectives and was ordered in a logical sequence which followed the township establishment process. This allowed for the meticulous documentation of the different critical success factors within each activity. The literature was analysed by the researcher to identify the preliminary critical success factors from which a specific set of questions were formulated that will best aid the researcher in answering the research question. This was to ensure content-related validity and to provide the researcher with a deeper understanding of the topic being investigated.

According to Brynard and Hanekom (2006:46) questionnaires have the following advantage and disadvantages:

Advantages:

- Can be posted, emailed or faxed prior to the interview process.
- Questionnaires provide the participant time to think about the answers to the open questions allowing for more in-depth interviewing.
- The researcher can reach a larger geographical area.

Disadvantages:

- The disadvantage is that the researcher is not on hand to explain any uncertainties which may result in distorted answers.
- Questionnaires do not allow the participant to freely communicate his perceptions and experiences.
- Historically have a low response rate.
- Incomplete questioners.

However, as the questionnaire formulated served as a basis for the interviewing process, the above mentioned disadvantages will be largely eliminated when the interview is conducted.

The questionnaire formulated was divided into the following sections:

Section A: Demographic data

Section B: Assessment of the critical success factors within the township establishment process in terms of the Town-planning and Township Ordinance 15 of 1986.

Section C: Conclusion which entailed general questions on the questionnaire.

Section D: Thank you

For this study unstructured interviews yielded rich data as participants were able to respond and raise their views based on their experience without the influence of the researcher. The participant did not show a fear of commitment and were very willing to assist within the study.

3.4.2 Preparation for the interview and the interview process

The researcher made appointments with the identified property developers, town planners, engineers and project managers. Participants were contacted telephonically in advance in order to confirm a date, time and venue for the interview. The researcher reconfirmed a week prior to the appointment. The participants were introduced to the research topic telephonically prior to the meeting. The questionnaires were also forwarded to the participants prior to the appointment to allow the participants time to think about the answers to the questions which will allowed for more in-depth interviewing.

The interviews were open-ended as to encourage the participants to provide as much information as possible regarding the perceived critical success factors. Follow-up interviews were conducted with a selected few to verify or add more information. The interviews were digitally recorded with the permission of the participant.

3.4.3 Pre-testing

According to Brink (1996:60) a pilot study is a small scale version of the major study. Before the actual interviews a pilot study was conducted with a participant who had experience within the township establishment process. The same questions and questionnaire planned for the actual interview were discussed with the participant to

ensure that both these instruments were relevant and effective in extracting the necessary information to conclude the research objectives.

3.5 ETHICAL CONSIDERATIONS

Ethics refers to the quality of the research procedures. According to Burns and Grove (2001:191) it starts with the identification of the topic and continues through the publication of the study, which requires honesty, integrity and adherence to professional legal and social obligations to the research participant.

In this study, the ethical consideration of confidentiality and the right to self-determination was adhered to. Confidentiality was maintained by not revealing their identity or the name of the company they work for. Written approval for the use of the questionnaires was also obtained from the University of Pretoria to further ensure that the various ethical considerations were strictly upheld.

According to Burns and Grove (2001:196), the right to self-determination is based on the ethical principle of respect for a person. This meant that the participants must have adequate experience relating to the research topic, so that they are capable of comprehending the information. They should also have the choice to consent voluntarily to participate or to decline in the research study.

Due to specialized nature of this study participants were selected based on their knowledge of the research topic. The research objectives were communicated to the participants and their consent was obtained prior to the interview. The participants were also reminded that they could withdraw from the process at any time and that their participation was completely voluntary.

3.6 LIMITATIONS OF THE STUDY

The research conducted will be limited to the South African residential, industrial and commercial industry within the Gauteng region.

Due to the specialized nature of the research the study will depend on the participant's perceptions and experiences within the township establishment process. Although limited information is available on the actual township establishment processes no literature is available on what the critical success factors are and what their impact is on the township establishment process.

3.7 CONCLUSION

In this chapter the research methodology, design and framework were highlighted. The method of data collection was emphasized to ensure the credibility and validity of the research study.

Chapter 4 will discuss the findings of this research.

4 RESULTS

4.1 INTRODUCTION

This chapter describes the presentation and the analysis of the data. According to Brynard and Hanekom (2006:60) during the process of data collection the researcher is engaged in the preliminary analysis of the data to retain only the relevant data.

The purpose of this chapter is to ensure that through a process of data filtering; only the relevant data will be used in this study. This will enable the researcher to present data that is accurate and reliable to conclude the research question.

4.2 PRESENTATION OF DATA

The results of the study are summarized into a Gantt chart coupled with a communication diagram indicating the critical success factors as well as the internal and external bodies involved within the township establishment process. Refer to Appendix D for the Gantt chart and Appendix E for the communication diagram.

4.3 DATA ANALYSIS

According to Streubert and Carpenter (1999:60) data analysis start with listening and reading of the data recorded. After each interview and questionnaire completed by the interviewee the data was analysed based on Tesch's method which included the following steps:

- The researcher listened to the audio tape recordings and re-read the answered questionnaires of each participant to filter out irrelevant data and to get a understating of the data presented.
- This process was repeated for every participant to get a holistic sense of the data presented.
- Similar topics indicating on a critical success factor were grouped together. Remaining elements which did not fit into any grouping were also grouped together.
- The complied lists were then compared to determine which factors were more critical than the rest

- The data was then analysed to determine the critical success factors within the township establishment process in terms of the Town-planning and Township Ordinance 15 of 1986.

4.4 FINDINGS

4.4.1 Demographic Data

The method of data collection allowed the participants to share their own experiences and perceptions regarding what they regard as the critical success factors within the township establishment process. This also enabled the researcher to explore different avenues within the township establishment process and whether a relationship exists among the different professions in terms of what the critical factors are.

The participants interviewed had extensive experience within their field of expertise, however, it emerged that the town planners had a deeper understanding of the overall township establishment process. This was expected as town planners have the academic background and are responsible for processing township applications for land-use rights.

Property developers interviewed shared a similar level of understanding although not as comprehensive but tend to focus more on the feasibility side of the project. However, it became evident from the interviews conducted that not all property developers share the same level of understanding especially those are new to the property development industry.

Civil engineers also showed a high level of understanding but electrical engineers to a lesser degree. Civil engineers are more involved in the overall process than electrical engineers so it is to be expected that civil engineers will have a better understanding of the process.

Although all professionals showed a high level of understanding of what was required in their respected field of expertise, the majority of the professionals involved had a general to limited understanding of the overall township application process.

4.4.2 Analysis of the Township Establishment Process

From the interviews conducted it was concluded that the majority of developments experienced some form delay and from this a collective view in terms of what the critical success factors are within the township establishment process were formulated.

- **Quality of the professional team**

The quality of the professional in terms of their understanding and knowledge of the township establishment process is essential to the lodging of a successful and complete township application.

Developers have very little control as local authorities have their own criteria by which the need and desirability of each township application is judged. The attitude of the local authority is also often to discourage rather than to encourage a new development. Therefore the input of the professionals involved is essential as the developer relies on their input and guidance to mitigate their risk in terms of projects delays and cost overruns throughout the process.

The relationship between the professionals involved and the local and external bodies are crucial to facilitate the approval process. The developer needs have an established network of professionals and specialised consultants to assist the developer to resolve any issues that might arise.

The process is dynamic and must be driven by the appointed project manager who in the majority of the cases is the town planner. The project manager must facilitate the communication process and integration between all parties involved for the lodging of a complete township application in order to minimize delays within the approval process. The professionals involved must also be willing to push themselves the extra mile if the need arises to try and speed up the process.

- **Preliminary investigation**

The preliminary investigation into the capacity and location of the existing engineering services are critical as it could have a serious cost and time implications on the proposed development. If there are no external services such as water, sanitation or electricity available to service the development, the project would in all probability be shelved depending on the type developed.

The legal and cadastral boundaries as well as what the future planning is for the broader area together with the scrutiny of the title deed, existing leases, possible mineral rights, and what existing restrictive conditions such as water rights and servitudes for roads, railway lines, water, sewer, gas and power lines are tied into the land must be investigated prior to the lodging of the township application. Where a restrictive condition of title is contained within the Deed of Transport the developer can apply for the removal of these conditions in terms of the Gauteng Removal of Restrictions Act 3 of 1996 in Gauteng. This process is time consuming and should be incorporated in the planning of the overall project.

The time frame in which the mineral rights holder consent may be obtained is dependent on the geographical location of the proposed development i.e. if the proposed development falls within a mineral rich geographical area obtaining the letter of consent will be more difficult as compared to a development where there are no minerals available. A period of anywhere between a week and two months should be allowed for within the planning of the project.

Accessibility to the development and the additional traffic generated by the development and the impact thereof on the existing road infrastructure must be investigated. The transport engineer must obtain written approval from the South African Roads Agency Limited (SANRAL) or Gauteng Provincial Government Department of Public Transport, Roads and Works (GAUTRANS) as required by virtue of the National Roads Act, 1998 (Act No. 7 of 1998) or GAUTRANS if the development requires access from provincial or national roads. Obtaining written approval can take between 6 to 12 months depending on the location, size and nature of the development.

The developer must also investigate whether the proposed development is aligned with the IDP's and LDO's of the local authorities. If the development falls outside the urban development boundary or urban edge of the local authority the development is considered to be an urban sprawl. This means that there might not be external bulk engineering services available to service the development. Local authorities tend to imply a strategy of compaction and densification and will therefore in all probability not approve a township application that falls outside the urban edge. Approval from the Department of Agriculture will also be required as stipulated by the Agricultural Land Act 70 of 1970 if land under investigation falls outside the urban edge. The main focus of the department is to preserve agricultural land which is considered to be a scarce, non-renewable natural resource. If the land is deemed to have any agricultural potential the developer will in all probability not obtain approval for township development.

The above mentioned activities are critical not only to the lodging of a successful township application but also to the overall feasibility of the project. Proper investigations will assist the developer in making an informed decision on whether to proceed with the development or not. A period of 2 to 3 months should be allocated to preliminary investigations.

- **Geotechnical investigation**

The geotechnical profiling of the site could impact on the proposed economic layout of the development as specific areas may be deemed unsafe for development. Cost implications could also arise in terms of founding of the proposed structures.

The existing soil conditions must be examined by a competent engineering geologist or geotechnical engineer and if the proposed development falls within a dolomitic geological area, approval from the Council for Geoscience (CGS) is required as stipulated by Tshwane and Ekurhuleni local authorities as well as the National Home Builders Registration Council (NHBRC). The NHBRC was established in terms of the Housing Consumer Protection Measures Act, 1998 (Act No. 95 of 1998), with the aim to ensure quality and good building practice, and to protect consumers and financial institutions providing credit in the home building industry through compulsory of home builders and developers.

This process is time consuming and requires a Record of Decision (RoD) issued by CGS which is based on the specific residential type, layout, density, foundation solution, risk management plan and proposed precautionary measures.

The RoD from CGS is required before the EIA process can be finalized. Depending on the geological area and the type of development proposed, it can take anywhere from 6 to 12 months to obtain written approval.

Flood lines must be investigated, if applicable, by a civil engineer as required in terms of Section 144 of the National Water Act, 1998 (Act 36 of 1998). The results of this investigation could further delay or impact on the economic layout as no development is allowed within the 1:100 year flood line level.

- **Environmental Impact Assessment (EIA)**

The EIA process is time consuming and can take several months or even years depending on the sensitivity of the proposed development on the immediate and surrounding environment. Based on the Environmental Impact Assessment (EIA) and in conjunction with the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (GDACEL) will either refuse the application or release a Record of Decision (RoD) that stipulates the terms and conditions to which the proposed development must adhere to. Any sensitive area's to the development must be identified and incorporated into the planning as it may have a detrimental effect on the feasibility of the project in terms of its economical layout or could even stop the proposed development. Obtaining approval can take anywhere from 6 months to 24 months depending on the location and the type of development proposed.

- **Approvals from local and external authorities**

The attitude of the local authority is often to discourage rather than to encourage a new development. Local authorities and external bodies are now also lacking the necessary expertise and workforce and as a result are overloaded and unable to facilitate and streamline the township application process. This can be attributed to political agenda's, skills shortages, unsustainable management practises, work ethic, lack of expertise and

forward planning. Property developers as well as the professional team involved are finding that to obtain even the simplest approval in terms of the ordinance takes weeks or even months. This presents major challenges for a property developer and his professional team to optimize the transformation process in order to minimize the risk of project delays, cost overruns and loss of income.

According to the Ordinance 15 of 1986 every township shall be provided with engineering services such as water, electricity, sewerage and roads necessary for the development of the township. Normally the developer will finance and install the internal services while the local authority will be required to install the external services and to maintain the internal services installed. However, due to the unsustainable management practises and the lack of forward planning, the availability and lack of capacity of the external services are becoming more evident resulting in developments being put on hold or even cancelled as a result of this. This not only impacts on the feasibility of a development but has a detrimental impact on the economy as whole. This can be ascribed to the skilled shortages, lack of expertise, work ethic, motivation and urgency experienced within our local authorities. However, even though the ordinance allows the property developer to appeal to the Townships Board if the developer is experiencing unreasonable delays the Townships Board is becoming bombarded with appeals which are causing significant project delays.

There are various external governmental bodies involved from which written approval is required for the establishment of a township. Without these approvals the establishment of the township can not continue. These external bodies are mainly governed by legislation (acts) which takes precedence over the Town planning and Township Ordinance 15 of 1986. The following bodies were deemed to have a significant impact on the successful establishment of a township:

- The Local Authority responsible for processing the township application
- Department of Minerals and Energy (DME) to obtain mineral rights holder consent.
- Gauteng Provincial Government Department of Public Transport, Roads and Works (GAUTRANS) who is responsible
- South African Roads Agency Limited (SANRAL)
- Department of Water Affairs and Forestry (DWAF)

- Department of Agriculture
- Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (GDACEL)
- Council for Geoscience (CGS) and the National Home Builders Registration Council (NHBRC)
- ESKOM who is the electricity supplier.
- Rand Water who is bulk water supplier to the Gauteng region.
- The Commission on Restitution of Land Rights where the Regional Land Claims Commission Office provides written approval that there is no land claims on the existing land.

The approval from the above mentioned bodies are of the utmost importance to ensure the successful establishment of the township. Failure to obtain this will result in project delays or the cancellation of the development.

4.5 CONCLUSION

Based on the interviews conducted most of the problems relate to obtaining statutory approvals in support of the ordinance such as geotechnical and environmental RoD's, finalizing service agreements etc. This can be ascribed to the lack of understanding of what the process entails by all parties involved. Local authorities lack the necessary expertise and enthusiasm to facilitate the application process resulting in project delays which relates to cost overruns and loss of income.

Where professional teams are involved they in general have a good understanding of what milestones needs to be achieved within each of their professions but lack the overall understanding of how the application process works in terms of the ordinance and how all the different activities/inputs are integrated and coordinated to form a successful township application.

As a result the majority of township applications are delayed and can take anywhere from 6 months to years to be approved. This makes the effective project management of the

proposed development very difficult as most of the activities fall outside the scope of control of the property developer.

Chapter 5 will discuss the recommendations and conclusion to this study.

5 RECOMMENDATION AND IMPLEMENTATION

5.1 CONCLUSION ON RESEARCH RESULTS

There are a number of critical success factors identified and discussed in chapter 4 which is critical to the township establishment process. However, these don't stand in isolation and from the interviews conducted it became evident that the process in itself is in dire need of an overhaul. The majority of the participants recommended that the process be simplified and become more transparent. Developers, together with their professional teams would like to see more of a consultative approach to reduce the risk of project delays: Currently the external bodies in its own, act purely as a final referee with no consultation allowed which places the developer in a difficult position as he can not interact with these bodies which inevitably leads to delays.

The skill shortage experienced within local and external governmental bodies has further negatively impact on the facilitation of township applications. Incompetence, lack of enthusiasm and accountability, and corruption all contributes to the further frustration of developers. The interviewees suggested remedies such as performance appraisals, disciplinary action against corrupt and incompetent officials and skills development programs to enable the authorities to better facilitate the application process.

5.2 CONCLUSION ON RESEARCH OBJECTIVES

The research objectives stated in chapter 1 aimed to:

- Provide a thorough understanding of the township establishment process available to property developers, civil engineers and project managers.
- Describe the impact of the Town-Planning and Township Ordinance 15 of 1986 legislative procedure on the township establishment process.
- Describe the alternative legislative procedures available to township establishment
- Describe the impact of the National Environmental Management Act (NEMA) on the township development process.
- Describe the critical success factors within the township establishment process to minimize the risk of project delays and cost overruns.

- Provide a project plan that will enable property developers to better plan, estimate costs and to identify milestones to facilitate the streamlining of the overall process of township establishment within the overall township development process.

All of the above factors have been analysed and explained within the study and are concluded in a communication and project indicating all of the different activities and role players involved in establishing a township.

5.3 CONCLUSION ON RESEARCH PROBLEM

The research problem stated that various residential development projects never realize or suffer economically as a result of a lack of understanding of how to plan and facilitate the rezoning of agricultural land for residential, commercial or industrial land use.

The researcher is of the opinion that the study of this document together with the communication and chart provided will suffice in providing developers with the necessary information and understanding to facilitate them in the establish of a new township. The document provides background information to the Town-planning and Township Ordinance 15 of 1986 and identifies the various critical success factors within the process enabling the developer to manage these influences which are critical to the feasibility and implementation of a project.

5.4 RECOMMENDATION AND IMPLEMENTATION

The Town-planning and Township Ordinance 15 of 1986 require a wide spectrum of activities which involves a host of professionals and external governmental departments to obtain township establishment. The following recommendations can be concluded from the interviews conducted to successfully transform the acquired land into proclaimed land.

- **Professional Team**

It is the responsibility of the developer to appoint the professional team that is required to lodge a complete township application. The selection of the team should be based on their

understanding and knowledge of the township establishment process which is essential to lodge a complete township application. However, the professionals involved must also be committed, driven and willing to go the extra mile. This is a necessity as developers are dealing with local and external authorities who lack the necessary expertise, capacity and enthusiasm to facilitate the township application process. Developers rely on the input of the professionals involved to drive the application process in order to mitigate their risk in terms of project delays.

Dependent on the location, type and scale of the development the following professionals must be appointed at the start of the project to facilitate the township application process:

- **Town-planner** who can act as the coordinator of the planning project and who is responsible for processing township applications for land-use rights. His ability to manage (not only planning but even more importantly co-ordination, execution and control of all the inputs required) is paramount to the success of the project. In fact, if he lacks these attributes some one else should be obtained to manage the lodging of the complete township application.
- **Civil engineer** who is responsible for determining the location and availability of existing services to the new township. The civil engineer is also responsible for the drafting of a services report and the design and supervision of the township services such as water, sewer, stormwater and internal roads.
- **Electrical engineer** who is responsible for the determining the location and availability of existing electrical services. The electrical engineer is also responsible for the design and supervision of the electrical reticulation system.
- **Engineering geologist** who is competent to undertake a dolomitic or any other type of geotechnical investigation for the new township.
- **Transportation engineer** who is mainly concerned with the compilation of a Traffic Impact Assessment report, indicating how the surrounding roads and other transportation systems are affected by the new township and what needs to be done to accommodate the additional flow of traffic generated.
- **Attorney** who draw up all legal documentation, agreements and contract. He is responsible to assist in scrutiny of the title deed of the land.
- **Environmental Assessment Practitioner (EAP)** who is responsible to conduct a Environmental Impact Assessment report.

The above-mentioned professionals will assist in the preliminary, legal and cadastral investigations as well as the geotechnical, transport and environmental studies.

- **Preliminary Investigations**

The availability and location of existing engineering services such electricity, water and sanitation which is essential to services the proposed development must be investigated prior to the lodging of the township application. This will assist the developer in determining what time and cost implications can arise and whether the project would still be feasible. If there are no services available, depending on the type of development, the proposed residential, commercial or industrial development will in all probability be shelved.

- **Legal and Cadastral Investigations**

This includes the scrutiny of the title deed, existing leases, possible mineral rights and what restrictive conditions are tied to the land. This is essential as the outcome of these studies could stop the proposed develop or may result in cost and time implications impacting on the feasibility of the proposed development.

The location of the proposed development must be investigated to determine whether the development falls within the urban development area of the local authority and whether the proposed development is aligned with the IDP's and LDO's. This could have a significant impact on type and scale of the proposed development. If the development is considered an urban sprawl, the application will in all probability be declined or delayed.

- **Traffic Impact Assessment (TIA)**

Depending on the scale of the development a TIA will have to be conducted by a transport engineer to investigate possible access points and what the impact of the proposed development will have on the surrounding transportation infrastructure. The results of this study could add a significant cost to the development.

- **Geotechnical Investigation**

The result of geotechnical study can have a significant impact on the economic layout of the site. Unsafe geotechnical conditions can alter the development as a whole or stop it. The developer must do a geotechnical investigation prior to the lodging of the application to ensure that the type and layout proposed coincide with the geotechnical conditions.

If the development falls within a dolomitic geological area the investigation and approval phase will have cost and time implications as a more furrow and extended investigation will be required and approval from external governing bodies.

It is recommended by the researcher that a furrow investigation be done prior to the lodging of the township application and that the investigation is launched as soon as possible.

Good operational planning and the integration and coordination of the various professional inputs are a necessity to a successful township establishment. The management and proactive management of this process by the developer, town planner or project manger through workshops and progress meeting will enable the team to best facilitate the management of activities that can only be managed passively and not actively.

- **Environmental Impact Assessment**

Obtaining approval from the various external governing bodies is the most time consuming process off al depending on the type, scale and location of the proposed development and the impact thereof on the immediate and surrounding area. Careful consideration should be given to the sensitivity of the area as this approval process can result in major project delays and resultant loss of income.

The researcher proposed that the developer conduct an EIA study as soon as possible and to align the proposed development to the expected results.

The above-mentioned activities are depended on the development location, scale, layout and type as all of these factors impact differently on each activity. It is recommended that the activities be concluded within the initial phase of the project prior to the lodging of the township application in order to mitigate the risk of project delays, cost overruns and potential loss of income.

Refer to Appendix D for a typical project plan indicating the flow of activities to be concluded within the township development process. Appendix E contains a communication diagram illustrating the flow of communication between all parties involved. It should be noted that the time frame indicated within the project plan and the involvement of the different parties as indicated in the communication diagram is dependent on the nature and scope of the proposed development.

5.5 RECOMMENDATION FOR FUTURE RESEARCH

There is a new process being formulated for township establishment which will in all replace the Town-planning and Township Ordinance 15 of 1986. The Gauteng Planning and Development Bill, is intended to provide for a single system of development, planning and land use management and set out principles for planning and development within the province that will create linkages and synergy between the plans and implementation programmes of local, provincial and national government.

The hope is that this new planning bill will result in decision-making structures at municipal and provincial level that will ensure development processes are expedited and development application backlogs eliminated.

Further research into the new Gauteng Planning and Development Bill as to how it facilitates the developer in obtaining township development is recommended. There are various phases as stipulated in chapter 1 within the township development process such as the construction phase which is in its own right a critical success factor to the overall township development process. These phases should also be investigated as this will inevitably assist the developer to optimise the transformation process.

It is also evident from the study that careful consideration and further research be done to identify the managerial skills and activities required to manage the township establishment process successfully within the present environment of an uncoordinated approach, acute shortage of skills, lack of knowledge and even corruption as a new simplified bill will not necessarily remove all the present short comings.

This study should also include the structures required to build the capacities within all participating bodies to enhance the process. It should also spell out the participation models (i.e. progress measurements and meetings) necessary to keep the process on track. We simply have to manage our way through all the adverse realities impacting the process at this stage.