
ECONOMIC IMPACT OF HIV/AIDS ON THE CONSTRUCTION SECTOR AND IMPLICATIONS FOR THE HOUSING POLICY

FINAL REPORT

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EXECUTIVE SUMMARY

INTRODUCTION

The question that the research has sought to answer is: “how will the pandemic impact on the supply side of housing development?”. This focus is important because it acknowledges that the implementation of the housing policy may be vulnerable to HIV/AIDS impacts - even when large budgets have been set aside for implementation. To achieve the scale of delivery set by the budget has required the development and establishment of implementation systems. This research process is premised on the assumption that no sector of society or the economy is immune to the impacts of HIV/AIDS. HIV/AIDS is an all-pervasive, crosscutting dimension of socio-economic development. Therefore the primary question of this research process is not so much whether HIV/AIDS will have an economic impact on the construction sector and the implementation of the housing policy, but: “how will the impact be felt on the different housing supply systems and their respective delivery agents?”

The report comprises the following sections:

- Section 2 provides an overview of the baseline parameters for the research. It describes the supply systems guiding housing policy implementation and the financial parameters for the study. It outlines the manner in which the components are applied in practice, their costs and intrinsic vulnerabilities, according to each system.
- Section 3 presents an interpretation of the demographic projections based on the findings of our fieldwork and identifies key issues emerging from the demographic impact of HIV/AIDS for the implementation of the supply systems.
- Section 4 presents our assessment of the economic impacts of HIV/AIDS on the construction sector based on a consideration of the demographic impact of the epidemic, its effect on the production costs of the supply systems and its relationship to the systems’ intrinsic vulnerabilities.
- Section 5 draws implications for the implementation of the housing policy by considering research findings in respect of the three supply systems and those arising from the provincial assessments.
- Section 6 presents our recommendations.

This research process has been undertaken by Development Works, with support from Abt Associates, and discrete contributions from the Centre for the Study of AIDS and the Medical Research Council.

SECTION 2: SUPPLY SYSTEMS

Section 2 explores the practical parameters of the implementation of the housing policy by unpacking the conceptual framework in terms of the supply systems and components thereof. These formed the basis of our demographic and economic analysis.

The term “supply system” refers to typical housing development processes for the delivery of state assisted housing. Three supply systems were identified in order to cover the main ways in which low-income housing is currently being delivered, as follows:

- The developer/contractor supply system which seeks to maximise profit and shies away from financial risk. To date, this system has processed the greatest share of the housing subsidy (approximately 97% by the end of 2001).
- The People’s Housing Process (PHP) supply system which is the most flexible of all systems in terms of process and product. Beneficiaries play a driving role in the supply process. This supply system has been identified as a significant delivery mechanism for future housing development.
- The Institutional housing supply system which enables the use of a financial vehicle to facilitate the leveraging of additional financial resources, thereby allowing for the construction of housing products of a high financial value. This supply system is poised for growth in the future.

The term “component” refers to elements of the supply system that contribute to the operation of the system (such as land assembly and planning, servicing, bridging finance, etc...). Components were identified to disaggregate the housing supply systems so that the impact of HIV/AIDS can be defined for each component. Variations exist in terms of the nature and relative contribution of each component to a system. In this report, the relative importance of each component in the different supply systems is discussed together with their intrinsic vulnerabilities and average costs which were used as the baseline to model extra AIDS costs.

SECTION 3: NATIONAL OVERVIEW OF DEMOGRAPHIC IMPACTS

Section 3 presents the findings of our research in respect of the demographic impact of HIV/AIDS on the workforce participating in the implementation of the housing policy. It presents firstly the manner in which we categorised the delivery agents that participate in the implementation of each supply system by occupational category, and secondly, the results of the projections produced by reflecting on these from the findings of our fieldwork.

The percentage of people working in the construction sector, and who are relevant to the supply system for low-income housing that are currently infected with HIV is estimated to be in the region of 16% in 2002, or +/- 1 in every 6 employees. This is expected to increase to approximately 24%, or +/- 1 in every 4 employees by 2015 if prevention programmes are not effective. Projected prevalence by age group shows that the most affected age groups are those between the ages of 21 and 40, and in particular the age groups between 26 and 35. The AIDS epidemic is growing rapidly. Around half a percent of the sector is expected to have AIDS in 2002 and this will rise to at least 3.2% in 2015. AIDS deaths will soon outstrip non-AIDS deaths, and will be concentrated in the 30-44 year age group. Annual adult AIDS death rates are projected to be 1.2% in 2002 and 2.7% in 2015. The burden of AIDS illness and death in this population is likely to more than double over the next decade, with around 3.2% severely ill with AIDS in a single year by 2015, and a further 2% of the population dying of AIDS that year, compared to around 0.8% of deaths in total due to other causes. HIV prevalence will be highest amongst unskilled labour at around 16% or 1 in 6 in 2002 and lowest amongst professional support staff and professional and technical staff on site at around 10% in 2002. AIDS death rates are projected to be around 1% in 2002 amongst unskilled labour, semi-skilled and skilled, rising to 2.7% by 2015. Corresponding rates for the professional categories are 0.5% and 1.5% respectively in the absence of prevention and treatment interventions.

Key issues emerging from the demographic impacts of the epidemic on the occupational categories can be summarised as follows:

- Unskilled labour is projected to be the most susceptible to demographic impacts, however, it is abundant and easily replaceable;
- The impact on semi-skilled and skilled labour is likely to be substantial, and while there is currently sufficient semi-skilled labour to meet the requirements of the supply systems, skilled labour and especially highly skilled labour is more difficult to source. In addition, where skilled labour is also the sub-contractor, the combination of technical, business management and construction management skills is extremely rare. This makes the supply systems vulnerable to a demographic impact linked to this sub-category.
- Although the projected impact for on-site professionals and technicians appears to be more limited, compared with other categories, the findings of our fieldwork suggest that the projections may be optimistic. In addition, we have noted a level of attrition of the skill base in the construction sector (linked to out-migration from the sector), and in particular in the low-income housing section of the sector. This means that the demographic impact on this occupational category could actually be amplified. It could also be moderated by greater access to antiretroviral and other effective therapy.
- The projected impact for the professional support occupational category appears to be less severe than for other categories. However, in terms of the current application of the supply systems this occupational category is affected by limited institutional capacity. This institutional capacity gap is most pronounced among the NGO, government, housing management institutions and some private sector role-players. It arises from the fact that the specific skills required to perform key roles tend to be combination skills which are acquired and consolidated on-the-job.
- The materials occupational category is likely to suffer a significant impact. Our interview findings reveal, however that this sector is possibly the best equipped to deal with demographic impacts as it has developed strong mechanisms related to institutional capacity building and active management of impacts such as absenteeism that enable the re-creation and maintenance of skills and organisational function.

SECTION 4: FINDINGS OF THE ECONOMIC ANALYSIS

Section 4 presents the findings of the economic analysis. It discusses the types of economic impacts that are likely to occur in the sector, and then illustrates the results of estimated magnitudes of the costs to the sector and, more specifically, the low-income housing supply systems.

The costing approach used generated an estimate of the average extra costs across the sector due to HIV/AIDS in each year. This approach is intended to identify system-wide pressures on the costs of delivering housing which could affect the required housing subsidy applicable to the implementation of each supply system. HIV/AIDS translates into an increase in the cost of production. AIDS-related illnesses and

deaths to employees affect a firm by both increasing expenditures and reducing revenues, they therefore incur direct and indirect costs.

HIV/AIDS will result in systematic costs over the next decade but it does not seem likely to be a dominant cost driver of subsidy requirements. Other existing inefficiencies, delays and cost drivers in the sector are likely to be more significant in most years.

However, management of HIV/AIDS effects on supply costs is required as:

- HIV/AIDS is likely to be a sustained cost influence on the sector. Indeed, HIV/AIDS could increase total workforce costs by up to 4,5% by 2006 and 7,98% by 2010.
- The average cost projections at sectoral level hide many projects and delivery agents where costs of delays or loss of key skills will be much higher than average. In a significant minority of projects these costs may lead to provider bankruptcy, non-initiation or non-completion of projects, or substantial delays in delivery.
- Projected average cost levels are a significant risk problem for providers in a sector that is reported to provide limited profits (7% on average).
- Smaller scale delivery agents may well be at higher risk of serious disruption if key employees are affected, even though less formal labour practices may protect them from some other impacts. Thus HIV/AIDS may undermine policy to promote small and medium enterprises.

Estimated increases in the cost of delivering housing units above 2002 costs were also calculated for the three supply systems. These consider the HIV/AIDS related labour costs to various occupational categories and delivery agents, as well as the estimated proportion of costs in each part of the process that are non-labour costs (i.e. capital costs). The results suggest that the overall impact of HIV/AIDS on subsidy requirements for costs of all supply systems will be moderate by 2010, and potentially manageable. The extra cost for each supply system are as follows:

- The developer contractor will experience an extra cost of 0,58% by 2006 and 1,44% between 2002 and 2010;
- The PHP supply system will experience an extra cost of 0,66% by 2006 and 1,60% between 2002 and 2010;
- The Institutional supply system will experience an extra cost of 0,99% by 2006 and 2,45% between 2002 and 2010.

In the short term many costs may not impact on the subsidy due to effective capping of the subsidy. However, underlying cost increases can be expected to lead to declining quality of housing provision and slower delivery if they are not matched by subsidy increases.

- HIV/AIDS tends to exacerbate problems driving costs and capacity for housing provision (in terms of attractiveness of participation in the housing market) that already exist. Addressing HIV/AIDS issues will often help to address these, and vice versa.
- HIV/AIDS is likely to increase costs of the institutional model of housing provision more than the PHP and contractor models.

Finally, the level of casualisation of the sector hides the range of significant social costs which HIV/AIDS will have on the low-income housing workforce. Many costs, particularly affecting labour that can be easily replaced are assumed to have very limited impact on sector or product costs. However, these would be borne by sector employees who lose employment and are not supported in dealing with HIV/AIDS impacts. While casualisation may be seen as a buffer against HIV/AIDS costs, it could also fuel the cumulative attrition of skills and delivery agents.

SECTION 5: IMPLICATIONS OF RESEARCH FINDINGS FOR THE IMPLEMENTATION OF THE HOUSING POLICY

Section 5 presents the findings of our analysis in terms of their implications for the implementation of the housing policy by considering, firstly, what they suggest for future implementation of each supply system, and , secondly, the findings of our provincial assessments, which relate specifically to the specific provincial characteristics of the application of the supply systems and those of the demographic impacts of HIV/AIDS in each province.

The supply systems and the delivery agents whom they mobilise are different. Therefore the manner in which they are affected by the impacts of the epidemic also differs. The following identifies the positive aspects of the supply systems and their vulnerabilities in a context of HIV/AIDS, based on the analysis of demographic and economic impacts.

In respect of the developer/contractor supply system we discuss how the impacts of HIV/AIDS, if not managed, could lead to:

- Disruptions in role of government role-players in facilitating and regulating the implementation of the supply system (both in terms of the subsidy administration and the land assembly and planning roles);
- Decreasing availability of bridging finance to resource the supply system;
- Attrition in the specific skill profiles required to implement the construction process efficiently; and
- Reducing rate of delivery because of the system's restricted ability to absorb or accommodate an economic impact arising from its rigidity and specificity.

In respect of the PHP supply system we discuss how the impacts of HIV/AIDS, if not managed, could lead to:

- Vulnerability of the housing support institutions to increased operating costs in the medium-term.
- Disruption of implementation because of the institutional limitations of the delivery agents supporting the social capital contributions from beneficiary households;
- Severe socio-economic vulnerability of social capital to the impact of HIV/AIDS; and
- The vulnerability of the system to economic impact on other components, which affect the production costs of the system.

In respect of the institutional supply system we discuss how the impacts of HIV/AIDS, if not managed, could lead to:

- Vulnerability of the system to increases in the cost of securing the services of built environment professionals and the vulnerability the operating costs of housing management institutions to increases;
- A decreasing ability of the system to secure the required end-user finance;
- Vulnerability of the system to the tensions between its cost recovery imperatives and the socio-economic impact of HIV/AIDS on beneficiaries;
- A decrease in the system's access to an already limited technical skill pool for products and post-delivery functions; and
- A compromised ability of the system to meet the dual objectives of high quality housing products within the financial limitations of subsidised housing.

The provincial sphere has a significant stake and role to perform in the implementation of the housing policy. Similarly the spread and impacts of the epidemic are largely provincially specific. Our provincial assessments reveal that the workforce in all provinces will be affected by HIV/AIDS, although there are large differences in severity of impacts between provinces. Provinces in which the low-income housing workforce is most severely affected in 2002 are Mpumalanga, Free State and KwaZulu Natal. Least affected provinces are the Northern Cape and Western Cape. However it is important to note that provincial differences in HIV prevalence are expected to become less pronounced over time. This suggests that those provinces which currently have limited overall capacity to implement the targets which they have set themselves are also those which will experience significant HIV/AIDS impacts over time.

In the provincial assessments, we unpack the provincial delivery targets in terms of the three supply systems. It is necessary to note that the shift in the provincial strategies to support the PHP (from ~2% up to 2002, to 16% by 2006) and institutional (from ~1% up to 2002 to 13% by 2006) supply systems will require significant institutional gearing and capacity building. This means that irrespective of the demographic and economic impacts of the epidemic, the current institutional capacity limitations of specific provinces will have a bearing on their ability to successfully implement the PHP and institutional supply systems- to the extent that they have planned to do. In an HIV/AIDS context, we suggest that these scenarios could be compromised further, if the demographic and economic impacts of the pandemic are not managed appropriately.

Having examined demographic impacts and their implications for the provincial application of the supply systems in line with provincial strategies, we also considered the provincial variations that would impact on a provincial extrapolation of HIV/AIDS extra costs. These relate to the specific application of the system in terms of provincial regulations and to the intrinsic vulnerabilities of each province. In the course of our fieldwork, we generally found that specific provincial regulations (such as higher minimum erf and top structure size than the national norm) and contexts (such as geotechnical conditions and historical settlement patterns) were identified as intrinsic vulnerabilities. There is potentially an infinite range of compounded economic impacts arising from the relationship between the provincially extrapolated extra percentage costs and these vulnerabilities. However, the key consideration to bear in mind is that provincial intrinsic vulnerabilities, like systemic intrinsic vulnerabilities, not only currently simulate the impacts of the epidemic but can also substantially aggravate these impacts. Furthermore, at least in the short-term, our

assessments reveal that these intrinsic vulnerabilities can have much higher economic impacts on the implementation of the housing policy than those which are brought about by HIV/AIDS.

The key issues arising in respect of the national perspective are as follows:

- HIV/AIDS will have demographic and economic impacts on the supply systems that will affect the cost of production of housing. We estimate that the average extra costs will range from 0,95% to 0,58% depending on the supply system over the next four years. These extra costs are nevertheless tangible and should be managed accordingly.
- The extent to which the extra costs of production will affect the implementation of the housing policy needs to be considered in relation to the systems' intrinsic vulnerabilities and those of the provinces in which they are applied. Indeed, it is important to reiterate that the past slumps in delivery occurred in a context where HIV/AIDS was not a significant factor.
- In the short term, these vulnerabilities potentially represent a greater threat to the policy's implementation than the extra costs of HIV/AIDS. In the medium to long-term, these vulnerabilities will be significant in determining the extent to which the extra-cost of HIV/AIDS affects the financial feasibility of the housing policy's implementation.
- Critically, project-specific demographic impacts have the ability to disrupt project implementation, especially where critical paths roles are affected, and in those provinces in which sourcing key roles is currently difficult.
- The historical implementation track record and current institutional limitations of the provinces suggest that both the scale of implementation and the extent to which the provinces have refocused their implementation targets in favour of the PHP and the institutional supply systems may not be feasible without significant institutional gearing- irrespective of HIV/AIDS. In the context of HIV/AIDS, the need for institutional gearing and capacity building will become even more critical.
- Over time, the epidemic will also aggravate the current risk of institutional memory loss arising from the limited ability of delivery agents to retain skills and experience over time, especially in those provinces that currently have limited institutional capacity, thereby presenting a substantial obstacle to implementation.
- In turn, this means that longer-term impacts will be felt primarily in terms of a reduced ability of provincial housing departments to effectively spend provincial housing budgets. This represents a sizeable risk as provincial budgetary allocations are aligned with the provinces' ability to spend their budget. In the long-term, this could lock budgetary allocation and expenditure in a decreasing vicious circle.
- Finally, it is anticipated that the operating budget of housing support role-players in government (provincial and municipal housing departments) will increase in the medium- and long-term. This could potentially affect the extent of their housing capital budgets.

SECTION 6: RECOMMENDATIONS FOR HOUSING POLICY IMPLEMENTATION

Section 6 presents our recommendations to the Department of Housing on how to address the impact of the pandemic on the construction sector and in turn on the implementation of the housing policy. While the spread of the epidemic is a reality that cannot be avoided, the fundamental principle of the recommendations is that the severity of its outcomes will largely depend on the extent and the manner in which it is addressed and planned for.

The recommendations are to:

- Support HIV prevention efforts, as an important and cost-effective response to the epidemic for the sector;
- Mainstream HIV/AIDS impacts in planning for housing policy implementation and knowledge sharing;
- Track impacts to identify trends, evaluate the extent of impacts over time and act as an early warning system where key roles are affected;
- Ensure contingency planning for micro-level impacts;
- Prioritise efficiency interventions to address intrinsic vulnerabilities;
- Promote targeted capacity building and ensure that financial support for sector training is made accessible to low-income housing delivery agents; and
- Address each systems' vulnerabilities in the face of HIV/AIDS.

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1 INTRODUCTION

1.1 Purpose and objectives of research

To date, HIV/AIDS impact research has been framed primarily in respect of how to address the housing needs of HIV/AIDS affected households, and more specifically people living with HIV/AIDS. Only recently are investigations being made into how the demographic and economic impacts of HIV/AIDS may affect budgetary allocations for housing capital expenditure. Little thought has gone into appraising and accounting for the impacts which the epidemic will have on the supply side of housing development. However, policy in and of itself does not ensure implementation and change, even when significant budgets have been set aside to this effect. In the first two years of the housing policy's implementation, less than third of the budget set aside for housing development had been spent. The institutional and operational teething problems which originally hindered implementation were overcome once the implementation supply systems were established. The achievements of the delivery of over one million subsidised housing opportunities, since 1994, suggest that, to a large extent, the systems set up to implement the policy have been successful in mobilising an extraordinary range of delivery agents, in the government, private and civil society sectors. However, the machinery remains fragile and is vulnerable to institutional and financial pressures and capacity limitations.

This research process is premised on the assumption that no sector of society or the economy is immune to the impacts of HIV/AIDS. Ample research has been undertaken which demonstrates, that HIV/AIDS is an all-pervasive, crosscutting dimension of socio-economic development. South Africa has one of the world's worst HIV/AIDS epidemics, although it has developed later than in African countries to the north. The full force of the AIDS epidemic, which lags behind the HIV epidemic, has yet to be experienced. Therefore the primary question of this research process is not so much whether HIV/AIDS will have an economic impact on the construction sector and the implementation of the housing policy, but how will the impact be felt on the different housing supply systems and their respective delivery agents.

The broad objectives of the research are:

- To provide strategic information to the National Department of Housing, about how the economic impact of HIV/AIDS will affect the implementation of the housing policy (i.e. the supply side).
- To specify and assess the economic impact of HIV/AIDS on existing housing delivery supply systems and delivery agents to assess their ability to continue performing their delivery roles in the light of the impacts that they will experience and how this may change their viability;
- To raise the awareness of the construction sector role-players of the economic impact of HIV/AIDS on their interests¹.

1.2 Conceptual and methodological approach

The research process was divided into four phases as follows:

- Phase 1: A literature review, interviews of national delivery agents and stakeholders, and three settlement case studies, consolidated into Reports 1, 2 and 3;
- Phase 2: Provincial field research aligned to demographic projections and economic modelling contributing to Report 4;
- Phase 3: The integration of the findings and their analysis to develop policy implementation recommendations consolidated into Report 4; and
- Phase 4: The dissemination of research findings.

Figure 1 below sketches out the different phases of the research. It identifies the specific activities in each phase, and their respective contribution to the overall research findings and outputs.

¹ This objective was met both in terms of the research process and in terms of the numerous presentations which were made to stakeholders and role-players, additional to those originally envisaged at the onset of the projec.

Figure 1: Research phases, activities, contributions to outputs, reports and workshops

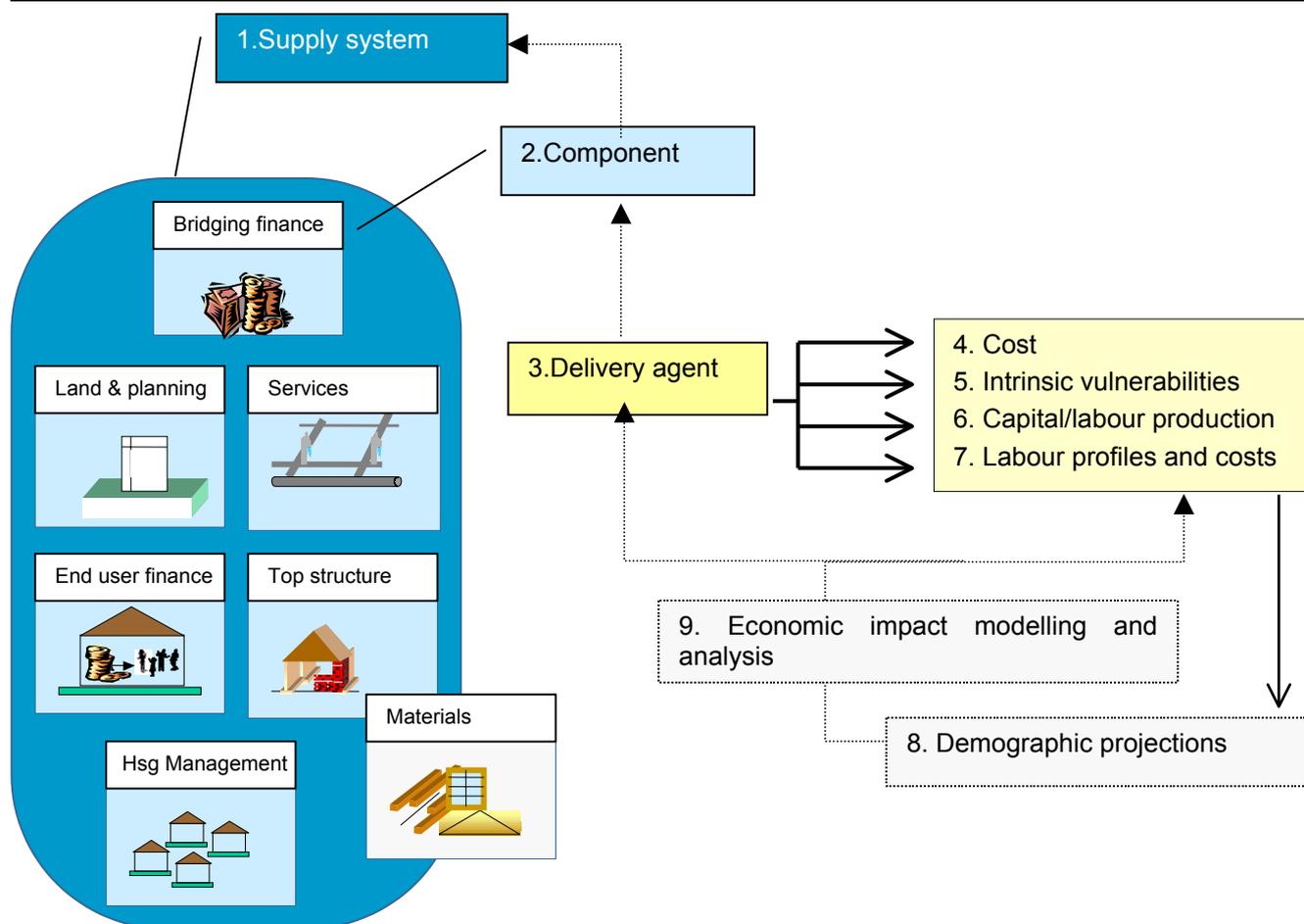
While our topic was broadly focused on the realm of economic impact of HIV/AIDS on the construction sector, we sought out, from the start, to anchor our approach on those delivery systems and agents in the sector that are directly relevant to the implementation of the policy. To achieve this level of relevance and focus, we needed to develop a clear conceptual understanding and definition of how the policy is indeed implemented in practice. For this purpose we sought to single out “typical” supply systems to implement the policy.

To obtain reasonable inputs and assumptions for both demographic and economic analysis, and to ensure the analysis’ relevance to low-income housing, it is necessary to understand how the sector works, who comprises it (demographic) and what costs are associated (economic) with supplying low income housing. Because this study focuses on an entire sector comprising a range of supply systems, the components of each system needed to be 'unpacked'. The 'unpacking' of the different delivery systems was also important in identifying intrinsic weaknesses or stresses in each system, even before the impact of HIV/AIDS is determined. Once detailed information was provided through the careful analysis of all the components and the agents who deliver within the system, two important analytical activities were completed:

- Analysing the demographic susceptibility of the low-income housing workforce for the respective delivery agents and;
- Analysing the impact on the cost of labour and production.

The findings of our analysis were reconciled to develop a national assessment as well as separate provincial assessments. These were then aggregated and synthesised to identify implications for the implementation of the housing policy and formulate recommendations.

Figure 2: Conceptual approach of the Research



1.3 Report Structure

This report comprises the following sections:

- Section 2 provides an overview of the baseline parameters for the research. It describes the supply systems guiding housing policy implementation and the financial parameters for the study. It outlines the manner in which the components are applied in practice, their costs and intrinsic vulnerabilities, according to each system.
- Section 3 presents an interpretation of the demographic projections based on the findings of our fieldwork and identifies key issues emerging from the demographic impact of HIV/AIDS for the implementation of the supply systems.
- Section 4 presents our assessment of the economic impacts of HIV/AIDS on the construction sector based on a consideration of the demographic impacts of the epidemic, its effect on the production costs of the supply systems and its relationship to the systems' intrinsic vulnerabilities.
- Section 5 draws implications for the implementation of the housing policy by considering research findings in respect of the three supply systems and those arising from the provincial assessments.
- Section 6 presents our recommendations.

1.4 Team

This research process has been undertaken by Development Works, with support from Abt Associates, and discrete contributions from the Centre for the Study of AIDS and the Medical Research Council. The Development Works team consists of Cecile Ambert, project management, research and documentation, Marc Feldman, strategic and management support, Gemey Abrahams, Ted Baumann, strategic support and research, Nadia Goetham and Thavanassen Govender research. The Abt Associates team consists of Anthony Kinghorn, Gill Schierhout and Malcom Steinberg. The Centre for the Study of Aids team comprises Mary Crew and Nolwazi Gasa. Liz Thomas is responsible for the Council for Medical Research's contribution.

2 SUPPLY SYSTEMS

The term “supply system” refers to typical housing development processes for the delivery of state assisted housing. Three supply systems were identified in order to cover the main ways in which low-income housing is currently being delivered. Because of the differences in these systems, it would have been entirely hypothetical to describe a generic supply system. While describing, analysing and modelling the three systems does make for a detailed study, it is the most accurate way to 'unpack' how low-income housing is being supplied in South Africa. The three supply systems are:

- The developer/contractor supply system;
- The People’s Housing Process supply system; and
- The institutional supply systems.

2.1 Supply systems overview

The term “supply system” refers to typical housing development processes for the delivery of state assisted (subsidy) housing. Each system has its own variations which affect the housing supply process, the economic logic of the system, the costs of production, the management system and risk factors. For these reasons, and in order to provide baseline data, it is necessary to understand each of the three systems. The three systems are:

- **The developer/contractor supply system**

This system operates primarily according to a commercial logic of profit maximisation and will seek to mitigate financial risk. To date, this system has processed the greatest share of the housing subsidy. Typically, it has been driven and controlled by private sector operators who have generally specified both the process and outcomes of the supply system, from the initiation and identification of specific projects, to land acquisition and planning, the servicing of sites and the development of top structures.



- **The People’s Housing Process (PHP) supply system.**

This system has a high level of management and process flexibility. Also, subsidy beneficiaries play a driving role in the supply process. The PHP supply system, unlike the developer/contractor supply system, is more concerned with product and process maximisation. Although it represents a small proportion of housing development to date, this supply system has been identified as a significant delivery mechanism for future housing development. Finally, this system is mostly implemented on serviced sites developed under the previous political dispensation.



- **The Institutional housing supply system.**

This system has been singled out because of the continued financial and legal obligations of the subsidy recipient institution after project implementation. It also enables the use of a financial vehicle to facilitate the leveraging of additional financial resources, thereby allowing for the construction of housing products of a high financial value. This housing supply system has only formed a relatively small proportion of the overall housing delivery to date, but it is poised for growth in the future.



2.1.1 Key financial parameters for the study

A key factor influencing the development of housing products has been low household affordability. For the purpose of the study, the definition of the term “low-income housing” refers to state-assisted housing products valued at less than R100 000, in other words, it is housing which households earning less than R5 000 per month are presumed to afford. By and large, the financing of housing supply systems falls within the ambit of subsidised housing². In practice, the supply systems can draw on different housing subsidy schemes, save for the institutional housing supply system which is primarily limited to the institutional subsidy. Although the developer/contractor supply system can make use of other subsidy mechanisms, in practice, it mainly operates with the project-linked and the consolidation subsidies. One of the key features of the PHP supply system is that it operates in a highly flexible and variable manner, and in principle each project can draw on any type of housing subsidy scheme.

2.1.2 Components and their costs

The term component refers to elements of the supply system that contribute to the operation of the system. Components were identified to disaggregate the housing supply systems so that the impact of HIV/AIDS can be defined for each component. Although variations exist in terms of the nature and relative contribution of each component to a system, typical features of each and relevant variations are identified. At the end of the sub-sections dealing with each component a table is provided which presents an overview of the costs associated with the component in each of the three systems (average/high/low), the standards and specifications applicable to the component and the variables which can affect the cost.

Bridging finance component



The bridging finance component refers to the availability, terms and conditions under which bridging finance mechanisms are made available to delivery agents to execute their own contribution to the system or to procure other components. In practice, the bridging finance component has been influential in making possible housing development in the subsidised environment. Because bridging finance is necessary until subsidy payments begin to flow, the manner in which the subsidy system is administered and regulated in each province has an important bearing on the cost of finance and the financial feasibility of housing projects. Indeed, if fewer subsidy payments are made and if the time taken to pay out the subsidy after a milestone had been reached is long, the interest borne by the loan holder increases, at times unsustainably. This is currently an intrinsic vulnerability of the supply systems.

The conditions under which different types of delivery agents secure bridging finance can vary tremendously. For instance, large developers and contractors have been able to source bridging finance either internally, or from mainstream financial institutions under fairly favourable lending conditions. On the other hand, smaller role-players have to source support primarily from dedicated parastatal or private institutions at much higher interest rates. This has meant that, in practice, the cost of the bridging finance component has been higher for the latter type of delivery agent.

In the course of our fieldwork, we noted that a number of contractors and developers do not rely on bridging finance facilities. This stems from the fairly limited accessibility of such facilities to small operators. Interviewees also explained that the financial risks associated with taking a bridging loan, and the cost of

² Given the current income profile of the those eligible for housing subsidies, most low-income housing delivery has yielded housing products and processes, targeted specifically to cater for those earning below R3 500 per month. Interviewees also explained that in the below R100 000 value band, two value bands are not provided for, the first being the R20 000- R40 000 gap, and the R75 000 to R100 000 gap. They linked this situation to a number of factors including:

- The lack of a formal secondary market for the purchase of such housing stock;
- The high costs per unit linked to sourcing and managing loans for housing products valued at less than R 40 000;
- The locational dynamics affecting land markets in relation to household affordability.

such facility was too high to be accommodated within the limited profit margins achievable in the sector. However, this situation limits the extent to which contractors and developers alike can take on new projects; thereby slowing down the implementation of the policy. Furthermore, concern was expressed by both private and parastatal financiers at the increasing levels of defaulting on bridging finance repayments.

Table 1: Bridging finance component

Bridging Finance		Developer/Contractor	PHP	Institutional
% costs of housing product	Average	2%	1% (mostly through cost recovery)	2%
	High	5%	2%	5%
	Low	0%	0%	0%
Standards		Cash Flow	Cash Flow	Cash Flow
Cost Variable		Number of developers bridge own financial requirements Contractors and suppliers bridge finance Interest rate	Geared through saving schemes and NGO subsidised	Donor subsidised bridging finance

End-user finance component



The end-user finance component refers to the availability, terms and conditions of financial resources on a loan, mortgage or other basis to beneficiaries. This is now primarily secured as part of the institutional supply system. In this system, it is made available to housing institutions, rather than directly to the beneficiary of the housing product. In terms of the institutional housing supply system the value of the end-user finance contribution to the cost of production of the housing stock (between R 65 000 and 85 000) exceeds that of the subsidy. As such the cost of end user finance is not borne directly by the subsidy. However, it remains important to consider as a component of the supply system, because it forms the financial basis upon which the construction of new housing stock is dependent. Some PHP models, notably that developed under the leadership of the Homeless Peoples Federation (HPF) and the Development Action Group, provide end-user/bridging finance packages. The proportion of the amounts accessed by means of such packages in relation to the total cost of the housing produced, tends to be minimal and generally does not exceed 2% of the total costs.

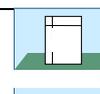
To date, the manner in which the repayment system has been articulated for end-user finance has been two-fold:

- Institutional supply system: the loan is held by the institutions, to which users of the housing stock owned by the institution make ongoing financial contributions. These financial contributions by beneficiaries vary according to the tenure form being granted and can take the form of rental, instalments or monthly contributions. Yet, the liability for the repayment of the loan is held directly by the institution. Guarantees on loan amounts typically only cover 20 to 35% of the total value of the loan.
- PHP system: small loans are granted over a short period of time and are generally conditional on prospective beneficiaries establishing a regular savings record. Depending on the institution facilitating access to end-user finance, repayment can take the form of fixed repayments over a variable period of time, variable repayments over a fixed period of time, or variable repayments over a variable period of time.

Table 2: End-user finance component

End user finance		Developer/Contractor	PHP	Institutional
% costs of housing product	Average	0%	1% (mostly through cost recovery)	Cost recovery
	High	N/A	2%	R600 per unit/month
	Low	N/A	0%	R250 per unit/month
Standards		N/A	Cash Flow	Fund viability
Cost Variable		N/A	Geared through saving schemes and NGO subsidised	Duration of loan Variables in loan Interest rate

Land assembly and planning



The land assembly and planning component refers to the process of identifying suitable land for housing, securing the development rights or purchasing the land from its owner, undertaking land development applications and other physical planning activities, as well as ensuring all tenure

arrangements. This component is a key factor impacting on the success or failure of housing projects and processes. Because land availability is affected by factors such as geophysical conditions, land markets, land ownership and urban form, identifying suitable land at an affordable cost to the subsidy has often proved to be an obstacle to development. The planning process affects the financial viability of housing projects. It bears outright costs (related to township establishment procedures and the registration of rights in the name of beneficiaries), and can also cause delays which impact on the financial viability of projects. Although undergoing significant overhaul, the planning system is identified as an area of intrinsic vulnerability in the supply systems, rigged by poor institutional capacity and efficiency. Therefore, because it affects the extent to which other activities can be performed timeously, delays or obstacles in this component have a knock-on effect on the cost of other components to the subsidy.

Table 3: Land assembly and planning component

Land Assembly and Planning		Developer/Contractor	PHP	Institutional
% costs of housing product	Average	5%	1.5% (mostly occurs on serviced sites)	10%
	High	10%	5%	12%
	Low	3%	0%	5%
Standards		250m ²	N/A	N/A
Cost Variable		Land availability and markets Planning system Bulk services availability	May require land acquisition and planning where projects happen in situ (i.e. after a land invasion)	Donation of land by municipality Tenure rights

Services component



The services component refers to the process of site preparation, services design and implementation as well as securing services approval (as part of the planning process) from municipalities. Several factors affect the financial and operational viability of the services component. These include the services standards which have a direct cost to the subsidy and the availability of bulk infrastructure to meet the additional demand accruing from new users. Such standards vary between different provinces and municipalities. Other factors affecting the cost of services include geophysical conditions and whether the development is a green-field or *in-situ* process. These can increase the cost of implementing services by up to 50%. Site preparation and site servicing activities tend to be more capital than labour intensive. In the PHP supply system, this component tends to be under-stated (or hidden), as most PHP projects are occurring on site-and-services schemes developed under the previous political dispensation. The services component in the institutional supply system represents a high proportion of the costs of the housing product, given the general high quality requirements.

Table 4: Services component

Servicing		Developer/Contractor	PHP	Institutional
% costs of housing product	Average	34%	N/A	28%
	High	47%	N/A	32%
	Low	34%	N/A	25%
Standards		Full waterborne sewerage, metered connections	Mostly on serviced sites	Waterborne sewerage, metered connection, electricity paving landscaping
Cost Variable		Geotech In situ projects Standards lowered in some provinces Scale of housing project		Geotech

Top-structure component



The top structure component is the actual construction of the housing product. Depending on the supply-system, different outputs are yielded from this component. Typically, the developer/contractor model yields fairly standardised products, having to conform to minimum norms and standards set by the National department of Housing and those of the National Home Builders Registration Council's (NHBRC). The PHP process, operating within the same subsidy limitations, does not always have to abide with such minimum norms and standards. The institutional housing product, by enabling the leveraging of a range of additional

financial contributions to the subsidy amounts is characteristically designed to reflect concerns of aesthetic design, safety and durability.

The specific organisational structures and processes set up to implement the delivery of top structures differs according to the different supply systems as follows:

Developer/Contractor supply system

The developer appoints a main contractor responsible for overseeing the construction process, sourcing and managing materials and managing sub-contractors. The developer (whether a private organisation, a municipality or a not-for-profit organisation) is paid in drawdowns for the completion of specific milestones (ranging from 1 to 5 for the top-structure). The main contractor appoints sub-contractors either on a trade basis (i.e. bricklayers, carpenters, and plumbers), or to take responsibility for the construction of specific groups of erven in the development. National, case study and provincial interviewees reflected that the latter approach is preferred as it overcomes compounded delays which may arise should one of the trade-based contributions not deliver on time. The main contractor is paid by the developer based on pre-agreed milestones in the project as a whole, or when drawdowns have been paid to the developer. Sub-contractors then recruit labour, from the beneficiary community or from nearby communities and tend to pay them per house completed. Labour is paid per task completed (i.e. square metre of wall, number of metres of trenches dug, etc) on a weekly or biweekly basis. Typically, a community committee is set up to contribute to the procurement of labour and decisions pertaining to matters such as the design and orientation of housing products and layouts, as well as eligibility and access of beneficiaries. This system means that most of the financial risk associated with bridging finance, is held either by the developer or the main-contractor or both, and to a very limited extent by the labour-only sub-contractors.

PHP supply system

An organised community appoints (directly or indirectly) a project facilitation organisation (which can be a Trust, a municipal department, a non-governmental organisation, or a provincial housing support centre), to act as a recipient of housing subsidies, a technical support provider and/or a labour and materials broker. The subsidy amounts are forwarded to the institution performing the financial facilitation role, and are then disbursed based on the presentation of invoices for labour and materials. Because of the flexibility of the system, the beneficiaries can opt to approach the construction process from a range of process options - by undertaking the construction activities themselves, by appointing trade-based artisans, contractors or a combination of the above. Similarly beneficiaries can opt to source materials themselves or to source them from provincially approved suppliers or to let contractors provide them. Importantly, in this system three areas of skills and contribution are particularly important, financial, technical and process facilitation.

The Institutional supply system

Historically, this system has required the setting up of dedicated housing institutions to own and manage the housing stock for a period of at least four years after the completion of construction activities. Delivery agents such as non-governmental organisations and municipalities set up such institutions. The institutions source bridging finance and guarantees (in particular from dedicated parastatal organisations), and appoint a contractor to undertake the construction process. Typically, because of the high quality specifications which such products require, professional contributions from specialised architects and urban designers are necessary. To meet the quality specifications for the product, the level of construction skills required in this system, is high. This signifies that in practice little, if any, opportunity for employing local labour exist. As the housing stock is delivered, the housing institutions source prospective beneficiaries, who have to apply for subsidies. Upon occupation of the housing units, beneficiaries have to begin making ongoing financial contributions as well as an initial equity contribution ranging from R1 000 to R5 000.

Table 5: Top structure component

Top Structure		Developer/Contractor	PHP	Institutional
% costs of housing product	Average	11%	9%	16%
	High	15%	12%	18%
	Low	8%	7%	12%
Standards		N/A	38m2 (practice)	30m2
Cost Variable		Cost of labour Profit margins Scale of housing project (teams earn between R 1200 and R 1750 per house)	Extent of sweat equity (can save up to R 400 per house if beneficiary digs foundation and mixes cement)	Availability of skilled labour, level of "finish" Timeous performance

Materials sub-component



Materials are treated as a sub-component of the top-structure component. It comprises the manufacturing, transport, wholesale and retail of building materials. Building materials include, cement and cement products, clay, metal, plastic and wood products, as well as sand and stone. Typically, there is a direct relationship between the price of materials and the price of labour in respect of the top structure. In the low income-housing sector, the bulk of the cost of the top-structure goes to materials.

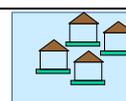
The production price of materials is highly vulnerable to changes in the price of petrol and changes in the exchange rate. Escalation costs on the price of materials is calculated on an annual basis, and can be built into the price of tenders and contractual agreements. However, interviewees explained that not only does the actual rate of escalation routinely exceed the industry proclaimed rate, but competition can be such that contractors are often reduced to quoting "fixed-price"³. Other relevant factors affecting the proportion of the cost of materials to the total value of the housing product, and in turn the cost to the subsidy include:

- The spatial location of a housing project (which affects the cost of transport);
- The purchaser of materials, as suppliers tend to have differential pricing structures for different types of role-players (providing advantageous credit facilities, discount and supplying transportation for large operators only); and
- The levels of specification in terms of quality and finishes, as well as the size of the housing structure.

Table 6: Materials sub-component

Top Structure (materials)		Developer/Contractor	PHP	Institutional
		Materials	Materials	Materials
% costs of housing product	Average	48%	89.5%	44%
	High	51%	93%	52%
	Low	47%	87%	38%
Standards		SABS approved	Approved by municipality	SABS approved
Cost Variable		Location of housing project (affects transportation of materials) Bought in bulk	Location of housing project (affects transportation of materials) Subject to delays in project implementation	Level of "finish" Rand/Dollar

Housing management



This term refers to the post-delivery management function performed by the institutional supply system and subsidy scheme. In institutional housing delivery, the housing management institution has to manage, maintain and administer the housing stock. This all incurs costs.

The models under which institutional housing is developed vary. The underlying tensions between - on the one hand, providing a social development and support role to beneficiaries, and on the other, ensuring cost-recovery to sustain project viability is one of the intrinsic vulnerabilities of this component and the system which it serves. This weakness is also affected by the extent of beneficiary involvement in decision-making in the institution. Finally, because this system is fairly new in the South African context, its organisational and structural characteristics are only emerging and often experimental.

Although considerable donor and international organisation support has been made available to support housing management institutions and their parent NGO, the skill base required to operationalise and manage them, are in short supply.

³ Although the JBCCCPAP formula provides for an average year on year escalation of 7,5%, this is seldom a reflection of real increase. For instance, the average rate for 2001 stood at close to 6%, however the price of bricks increased by 20%

Table 7: Housing management component

Housing Management + Housing Implementation support		Developer/Contractor	PHP	Institutional
% costs of housing product	Average	N/A	2.5% (mostly covered through facilitation grant + donor funded)	Cost recovery + donor funded
	High	N/A	5%	R 350 per unit/month
	Low	N/A	0%	R 120 per unit/month
Standards		N/A	Ongoing technical and financial management	Repayment of end-user finance, maintenance of stock
Cost Variable		N/A	Extent of donor funding to organisation Duration of project	Tenure form (from rental to co-operative housing) affecting beneficiary participation

2.1.3 Summary of costs

Table 8 below summarises the relative importance of each component in the different supply systems. It presents the range of costs of housing products identified in the course of our fieldwork for the respective products developed as part of each supply system, in practice, and reiterates the average percentage cost of each component in respect of the tree supply system.

Table 8: Average % costs of housing product driven by each component according to each supply system

		Developer/Contractor	PHP	Institutional
Cost of housing product	Average	18 250	9 500	75 000
	High	20 500	10 500	65 000
	Low	16 000	8 500	85 000
Bridging Finance		2%	1% (mostly through cost recovery)	2%
End user finance		0%	1% (mostly through cost recovery)	Cost recovery
Land Assembly and Planning		5%	1.5% (mostly occurs on serviced sites)	10%
Servicing		34%	N/A	28%
Top Structure (construction)		11%	9%	16%
Top Structure (materials)		48%	89.5%	44%
Housing Management + Housing Implementation support		N/A	2.5% (mostly covered through facilitation grant + donor funded)	Cost recovery + donor funded

3 NATIONAL OVERVIEW OF DEMOGRAPHIC IMPACTS

Demographic projections in this report have been produced using the most recently calibrated version of the Metropolitan Life/ Doyle model (see Annex A for a description of the model). The model is calibrated to reflect the most recent available data on the underlying profile of the South African population, and available epidemiological data on HIV/AIDS derived from South Africa and other countries.

As no complete dataset containing the demographic profile of persons involved in low-income housing provision is currently available in South Africa, we extracted demographic data from the 1996 Census for this purpose. Demographic data for all persons in the Census whose occupation was of relevance in the supply of low-income housing was extracted. The list of relevant occupations for inclusion was decided through consensus with housing sector and construction data experts.⁴ The emphasis here is on the relevance of the different occupational categories, more than actual employment in the low-income housing sector (as such data set does not exist). In total, data on some 1.8 million people was extracted. Based on expert knowledge of the sector, occupations were then grouped into five categories for the purposes of projections, as follows:

- Unskilled labour: this comprises mostly labourers with limited skills (i.e. mixing cement, digging foundations, passing and transporting materials on site).
- Semi-skilled and skilled labour: this refers specifically to labour on site in the civil engineering and construction sector. This category ranges from foremen and supervisory skills to trade-specific labour (bricklayers, plumbers, carpenters, plasterers, machine operators, welders, glazers, etc...) and their assistants and apprentices.
- Professionals and technicians on site: this refers to registered professionals (town planner, civil engineer, quantity surveyor, architects, conveyancers, etc...) as well as technicians (e.g. electrician, planning technicians, etc...)
- Professional support: this occupational category groups a wide array of people working in sectors that support- although not exclusively- the low-income housing sector. This includes personnel of financial institutions, non-governmental institutions, governmental institutions and research organisations. This category includes a variety of employment profiles from clerks to professionals.
- Materials: this refers to all labour employed in the materials sector, from the manufacturing to transport and supply (i.e. wholesale and retail) sub-sectors.

Overall, around 18% of the sample were women, who were disproportionately spread across the occupational categories (Table 9). Some 34% of the sample were in the semi-skilled and skilled occupations, followed by 24% in materials. Around 31% of the sample lived in Gauteng.

Table 9: Delivery agents

Occupational category	% of total	% of the category who are female
Labourers	15%	13%
Materials	24%	24%
Professional and Technical	11%	19%
Professional Support	16%	39%
Semi-skilled and Skilled	34%	5%
Total	100%	18%

Table 9 provides summary of estimates of potential low-income housing employees derived from the 1996 Census by occupational category and gender

The following section examines the range of delivery agents active in the different components, by specifying the nature of their contribution, their organisational characteristics, the manner in which they relate to the various supply systems and, where applicable, their intrinsic vulnerabilities. It also identifies which occupational categories are represented among each type of delivery agent.

⁴ The objective of this data extraction was to obtain a reasonably accurate demographic profile (line by line data) on persons employable in the sector. It does not purport to be accurate in terms of absolute numbers of persons currently involved in low cost housing delivery, but to provide a best estimate of the demographic profile of these persons.

3.1 Delivery agents and occupational categories

3.1.1 Bridging finance institutions

Bridging finance institutions range from corporate organisations such as the African Contractors Bank, to parastatals such as NURCHA (who has contributed to the delivery of 250000 units to date) and not-for-profit organisations such as the uTshani Fund (although it is targeted at the end-user).

These delivery agents are mostly represented in the “professional support” as well as – to a much lesser extent- the “professionals and technicians on site” occupational categories.

3.1.2 End-user finance institutions

Only a handful of end-user finance institutions participate in the supply of low-income housing. Such institutions range from corporate organisations such as Southfin, to parastatals such as the Home Loan Guarantee Company (HLGC), the National Housing Finance Corporation (NHFC) and NURCHA and not-for-profit institutions such as uTshani Fund and the Khuyasa Fund. One of the key characteristics of such organisations is their concern for minimising and or managing risk. By seeking to share risk between different operators, and interacting on a regular basis with loan-holders, such organisations attempt to shelter themselves from default.

These delivery agents are mostly represented in the “professional support” occupational category.

3.1.3 Professionals

These delivery agents are active in the land assembly and planning activities, as well as design of services and top structures. Typically, they include land surveyors, town planners, structural engineers, consulting engineers, architects, quantity surveyors, and conveyancers. They operate either as part of dedicated consulting firms, or as part of NGO housing support teams, or are linked to large contractors and developers (this is decreasingly so).

These delivery agents are mostly represented in the “on site professional and technicians” occupational category.

3.1.4 Developers specialising in the low-income housing market

What distinguishes the role of developer from other delivery agents is that the developer is responsible for the overall implementation of the project, including the financial risk-taking in the supply system (in particular by securing bridging finance). Although during the 1990's numerous large developers dominated the low-income housing market, today they have almost entirely left the market. Those still active are only finalising existing projects. Since, three types of organisations acting as developers are most common, including regionally active property development closed corporations, medium size civil or construction contractors acting as developers and municipalities.

Among private sector developers occupational categories include mostly “on-site professionals and technicians” as well as “professional support”.

3.1.5 Civil engineering contractors

Although there are clear signs that medium-size construction contractors are also redirecting their operations to more profitable construction sub-sectors, medium size civil engineering contractors continue to be fairly active in the market. Because civil engineering contracting is significantly more capital intensive than its construction counterpart (which shields the sector from factors such as local labour procurement requirements and restricts the number of players in the field), it has not been nearly as over-traded a sub-sector as the latter. Civil engineering contractors' in-house labour force comprises teams of highly skilled employees to operate plant and machinery. These teams are highly mobile and sought after both within South Africa and beyond its borders.

Civil engineering contractors are mostly represented in the “on site professionals and technicians”, semi-skilled and skilled labour”, and to a much more limited extent “professional support” and “unskilled labour” occupational categories.

3.1.6 Construction contractors

Most large construction contractors have moved out of the market in favour of regionally based, medium-sized operations. Construction contractors have undergone significant downsizing. Typically, main contractors primarily comprise of construction managers, skilled and semi-skilled technicians. They are responsible for managing the procurement of materials (and even, at times take on the associated financial responsibilities), as well as the construction process itself. Construction contractors and sub-contractors have tended to take on work in a housing project where the expected profit margins are extremely tight, and without significant contingency arrangement.

Construction contractors are mostly represented in the “on site professionals and technicians”, to a limited extent “semi-skilled and skilled labour”, and to a much more restricted extent “professional support” and “unskilled labour” occupational categories.

3.1.7 Sub-contractors

The construction sector unions identified that most skilled workers, after a wave of retrenchments in the 1990s, are currently operating as self-employed contractors and labour-only sub-contractors. At the project level, contractors routinely sub-contract smaller operators to source additional capacity to that which they keep in-house. Sub-contractors are mostly single member closed corporations, operating at the settlement level. Although they may have trade-specific construction skills, their exposure to process management, and business management has been limited, which has made them extremely vulnerable to problems affecting the financial viability of each project. Importantly, because of the extent of over-trading among small contractors, many barely sustain themselves on turnover rather than profit. Sub-contractors, depending on the scale of a housing project, may go on to recruit even smaller firms or artisans responsible for sourcing, training and managing local casual workers.

Sub-contractors are mostly represented in the “skilled and semi-skilled” occupational categories, to a lesser extent the “professionals and technicians on site” and “unskilled labour” occupational categories.

3.1.8 Local-labour

Local labour in the sector refers to semi-skilled and primarily unskilled labour (primarily recruited from the beneficiary community or among the residents of nearby settlements).

Typically local labour is selected not by the contractor or sub-contractors but by a community committee responsible for screening labour. At the project level, local labour is provided with basic levels of training. Estimates of the extent of training for different contributions vary from project to project. Even though labour is provided with training at the onset of a project, labour turnover on site is said to be high, and so is the incidence of labourers sending substitutes when they are unable to work on particular days. Although local labour is drawn upon in the developer/contractor and the PHP supply systems, this is not so in terms of the institutional supply system, where the quality of finishes required of the housing product, prevents the involvement of much unskilled labour.

Local labour is represented mostly in the “unskilled labour” and to a lesser extent the “semi-skilled and skilled labour” occupational categories.

3.1.9 Beneficiaries

Beneficiaries are involved in the housing supply systems in varying degrees and for different purposes in each supply system. They can take on a role closely aligned to that of the developer in the PHP supply system, by being responsible for decision-making and management of the contractors and builders they appoint directly, and/or by sourcing materials themselves, and/or through sweat equity contributions. In the institutional supply system, their participation occurs primarily after delivery has taken place, in the form of financial contributions, as well as varying degrees of responsibilities for the management of the housing stock. In the developer/contractor supply system, their role tends to be restricted to the provision of labour. In addition, by taking physical possession of the houses and submitting “happy letters” they also enable the payment of the last tranche of the subsidy amount to the developer.

These delivery agents are mostly represented in the “unskilled labour” and to a lesser degree the “semi-skilled and skilled labour” occupational categories. This categorisation is not intended to be representative of the actual profile of all beneficiaries, but reflects primarily on those that would participate in the construction process.

3.1.10 Housing support Non Governmental Organisations

These organisations are particularly involved in the PHP supply systems, where they provide technical assistance, including project management, training and facilitation support to community members, as well as taking on subsidy administration functions. They can take the form of Housing Support Centres, as in the Free State, dedicated housing support NGO's such as Planact, the Built Environment Support Group or People's Dialogue, or a range of municipal-linked support units. These institutions tend to be supported through donor funding in the form of a dedicated facilitation/start up grant so their cost is not generally borne by the subsidy. Some of the institutional weaknesses affecting NGOs active in the low-income housing sector are not unlike those facing other NGO's, namely an ongoing brain-drain of personnel to the public and private sectors.

Housing management institutions are primarily represented in the “professional support” and “on site professionals and technicians” occupational category.

3.1.11 Housing management institutions

Organisations involved in the institutional housing system are legal entities that receive institutional subsidies and in which ownership of the housing stock (and the associated financial and legal risk) is vested. Housing management institutions have been set up to deliver housing in terms of the institutional subsidy. This has meant that most were set up within the last five years. As such, the extent to which they have been able to consolidate their experience and skills base has been fairly limited.

Housing management institutions are primarily represented in the “professional support occupational category”.

3.1.12 Materials producers and suppliers

The manufacture and supply of materials is a highly monopolistic and centralised sub-sector. Since the late 1990s, materials producers have restructured extensively to align their activities with their core functions. In particular, the larger firms have begun outsourcing their transport requirements. Manufacturers of materials are also vertically integrated and own a number of materials supply chains used in the low-income housing sector. Some developers and contractors own their own materials manufacturing facilities. For example Group 5 owns the largest cement materials roof sheeting manufacturing company.

Materials suppliers trade a fairly competitive market. They range from nationally active chains to smaller operations active at the regional level. In the course of our research we noted that increasingly suppliers provide a technical support role to small and emerging contractors as well as some PHP initiatives.

Materials producers and suppliers are represented primarily in the “materials” occupational category.

3.1.13 Institutional role-players in government

The term institutional role-players refers primarily to delivery agents active within the national, provincial and municipal spheres of government. Their involvement is particularly relevant in respect of three aspects of the housing supply systems:

- The subsidy management functions;
- The land assembly and planning component; and
- The developer role.

These role players are involved in the screening and approval of project proposals and subsidy applications as well as the processing of subsidy drawdowns (claims). Significant administrative capacity variations exist between provincial departments of housing responsible for allocating and administering subsidies. In the course of our fieldwork the poor performance of most provincial government role-players in performing this function was identified as a major factor of project breakdown.

Secondly, the land assembly and planning component requires the involvement of municipal authorities, provincial authorities or other land development authorities. It includes the property registration system governed nationally by the Deeds Office and the Surveyor General's Office. No other sphere of government has undergone as much institutional transformation, on an ongoing basis, as the municipal sphere. The successive phases of re-demarcation and restructuring of municipal government have meant that the extent to which municipalities have been able to perform their planning function over spatial jurisdictions previously catered for by other organs of state has been affected.

In terms of the property registration system similar capacity problems were reported.

Government role-players are represented in the “professional support” and “on site professionals and technicians” occupational categories.

3.2 Demographic projections for the sector

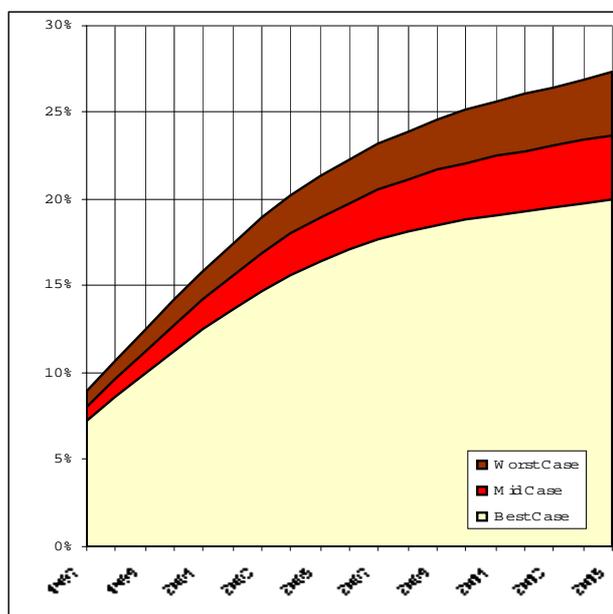
While projections have limitations and should not be considered to be precisely accurate, they nevertheless are likely to adequately reflect the overall levels and trends in impacts to guide planning and decision-making for delivery. Furthermore, conclusions drawn are likely to remain valid within a relatively wide band of estimates around those presented in this report. In addition, we are also able to reflect on the findings of the projections by drawing on the findings of our fieldwork- which although anecdotal- validate the conclusions drawn.

Priority needs for baseline projections include:

- **The number of people who will be HIV infected and when**
- **The number of people expected to be ill with AIDS**
- **Numbers of AIDS deaths**

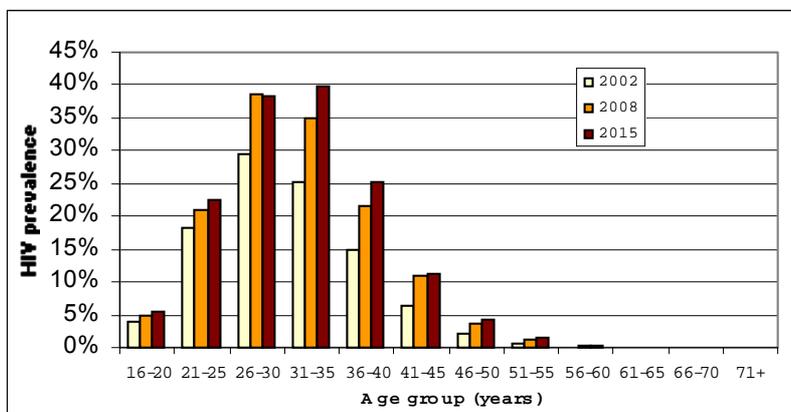
The percentage of people working in the low-income housing sector infected with HIV is estimated to be in the region of 16% in 2002, or +/- 1 in every 6 employees (mid case scenario). This is expected to increase to approximately 24%, or +/- 1 in every 4 employees by 2015 if prevention programmes are not effective (Figure 3). As indicated in Figure 3, under the worst and best case scenarios, HIV prevalence by 2015 will be approximately 27% and 20% respectively. Although prevalence differences between the scenarios are not substantial in the medium term, the difference in absolute numbers of HIV infected individuals is likely to be large. The prevalence figures presented are lower than those observed in antenatal clinic seroprevalence surveys, because construction sector employees have a different risk profile in terms of factors such as age, gender and population sub-group from the pregnant women included in antenatal surveys.

Figure 3: Projected level of HIV infections among people



Importantly, prevalence figures mask large differences in HIV infection in different age groups. Projected prevalence by age group is shown in Figure 4. The AIDS epidemic is growing rapidly. Around half a percent of the sector is expected to have AIDS in 2002 and this will rise to at least 3.2% in 2015. AIDS deaths will soon outstrip non-AIDS deaths, and will be concentrated in the 30-44 year age group. Annual adult AIDS death rates are projected to be 1.2% in 2002 and 2.7% in 2015.

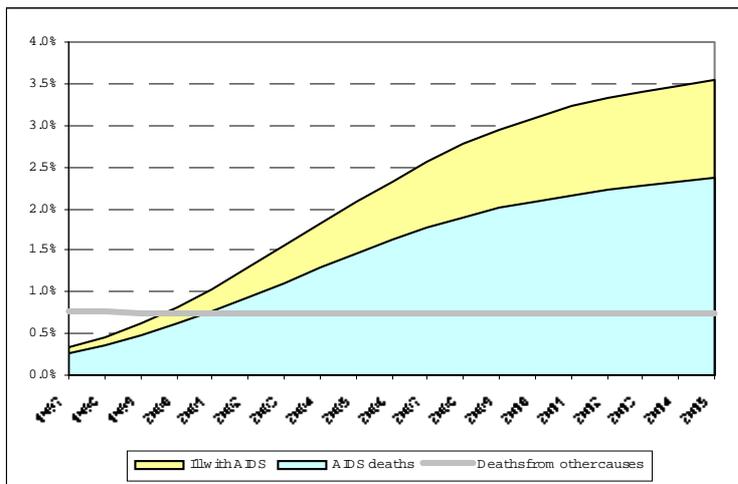
Figure 4: Spread of infection level per age group working in low-income housing



There are no marked gender differences in HIV infection among the low cost housing employees overall (not shown). Some 16% and 15% of males and females respectively are infected in 2002. This is projected to increase to 24% for both males and females in 2010. Although ordinarily HIV risk is assumed to be higher overall for women, the differing age profile of men and women in this sub-population is likely to account for the similarity in risk between the groups. In addition, the model and some empirical data show a convergence in HIV prevalence in men and women over time.

The burden of AIDS illness and death in this population is likely to more than double over the next decade, with around 3.2% severely ill with AIDS in a single year by 2015, and a further 2% of the population dying of AIDS that year, compared to around 0.8% of deaths in total due to other causes (See Figure 5).

Figure 5: Percentage of workforce ill with AIDS, dying of AIDS and dying from other causes to 2015



3.3 Interpreted projections per occupational category

The following sub-sections present an overview of the projections per occupational category by reflecting on their outcome based on the findings of our fieldwork.

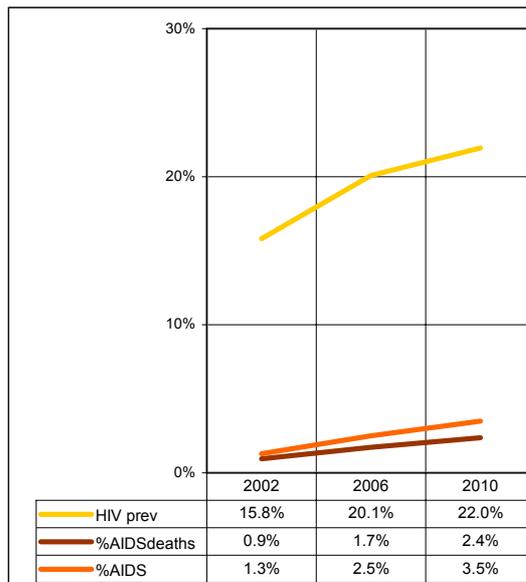
3.3.1 Impacts on unskilled labour

Based on the projections, unskilled labour is set to be the hardest hit by the epidemic. The figure opposite shows that HIV infection levels in this occupational category is set to rise from close to 16% in 2002 (1 in +- 6) to 22% in 2010 (less than 1 in 5).

Figure 6: Demographic impact of HIV/AIDS on unskilled labour employed in low-income housing

The number of people ill with AIDS in a given year is currently estimated to be less than 1 per 100 labourers, but will rise to between 3 and 4 per 100 by 2010. AIDS deaths in this category of labour will increase to between 2 and 3 persons per 100.

In terms of our interview findings the projected impacts appear to be realistic- although we have noted significant variations- both provincially and within a province, at the project level. This stems from the fact that unskilled labour is mostly drawn from the local community, and correlates with the variations in the demographic impacts of the epidemic generally observed between settlements and regions. In addition, where the settlement comprises a fairly high proportion of migrants (especially circular migrants), the demographic impacts may be more pronounced.



In terms of the Census data, 13% of this occupational category is made up of females. Our interview findings revealed, however, large variation in terms of the proportion of women at the project level. In more rural areas (especially in the former homelands and self-governing territories) unskilled labour routinely comprise more than 20% of women.

Finally, our interviews, especially with contractors, sub-contractors and NGO's also revealed that the demographic impact of HIV/AIDS is currently being felt at the project level. This is particularly pronounced in those provinces where the epidemic is most advanced. Interviewees related this perception of demographic impacts to a number of factors, including:

- Increases in illness and deaths among the dependants of unskilled workers (especially among young children);
- Increases in the number of funerals occurring in settlements where projects are taking place; and
- Sharp increases in beneficiary absenteeism at the time of handing over of properties in the last 3 years (from 5% in 1997 to up to 20% in regions that are particularly affected).

Anecdotal evidence tended to vary between 10% and 25% of unskilled and casual labour on site. Interviewees in Gauteng, Limpopo, the Free State and the Eastern Cape reported that often stigmatisation of HIV/AIDS leads individuals to claim that they have been bewitched as a reason for weight loss and recurring ill-health. Among the sub-contractors interviewed concern was expressed that illness related absenteeism was rife, and could amount to up to two weeks of absenteeism at a time per worker. The extent to which contractors (as opposed to sub-contractors) are able to track this is, however, limited. Indeed, labour turnover and attrition is traditionally high, and community committees often undertake the labour procurement role.

All interviewees emphasised that the unskilled labour is abundant. It is also important to emphasise that because of the local labour procurement requirements, the manner in which this occupational category participates in the housing delivery effort, tends to simulate the demographic impact of HIV/AIDS, as new labour has to be recruited, hired and trained with each new project.

3.3.2 Semi-skilled and skilled labour

The figure opposite shows that HIV infection levels in this occupational category are set to rise from close to 14% in 2002 (1 in +- 7) to 18% in 2006 and just under 20% in 2010 (1 in 5).

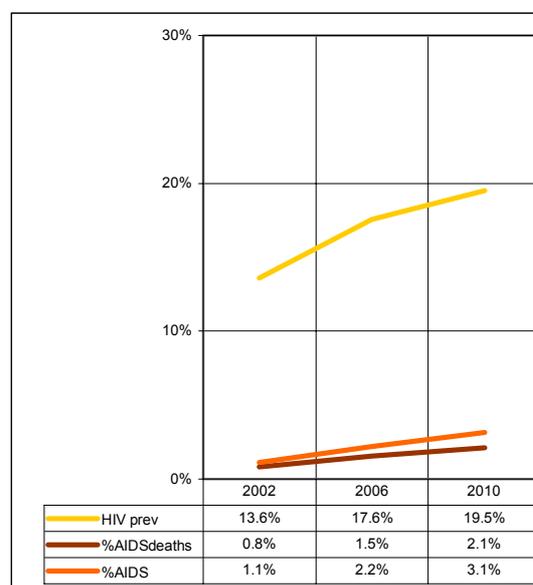
The number of people ill with AIDS in a given year is currently estimated to be approximately 1 per 100 persons in this occupational category, but will rise to just above 3 per 100 by 2010.

AIDS deaths will increase from less than 1 in 100 to above 1 in 50 in 2010.

While this national overall picture masks the significant variations across the provinces, we believe that the current estimated demographic impacts are conservative. Indeed, our interview findings reveal that although semi-skilled labour often comes from within communities in which projects are occurring, most skilled labour is highly mobile, moving from project to project as the need for skills arises, not only within provinces but also between provinces and even in the sub-Saharan region. This mobility is regular and skilled labour often resides on site for the greater part of projects.

Our fieldwork findings emphasise the high mobility of skilled and semi-skilled labour as a factor of demographic susceptibility to HIV/AIDS impacts. Reports of workers compounds being routinely targeted by occasional sex workers and "girlfriends" were abundant. Interviewees explained that it was not uncommon, on longer-term projects, for labour to father children in nearby communities. This suggests that the use of condom may not be prevalent. Of particular concern were the reports that the age of the "girlfriends" has decreased in recent years. Respondents from one of the largest civil engineering and construction organisation mentioned that they now routinely refer to the compounds as the "crèches"- because of the fact that they see young girls leaving the compound in the morning dressed in their school uniform. They explained that this occurs in spite of the company having placed entry restrictions for women in the compounds. Provincial interviewees also noted that it was common practice for skilled labour brought to project areas (in particular rural areas- where going "home" on weekends is not possible) to set up strings of

Figure 7: Skilled and semi-skilled labour



relationships across project locations. What this suggests is that not only is skilled labour exposed to HIV/AIDS, but that it also exposes the communities living within or near project areas.

Further, interviewees reported incidents of contractors subjecting their skilled employees to HIV testing for the purpose of obtaining visas to resource projects in countries in the sub-region, in particular Angola and Mauritius. Remarkably, prevalence rates of between 30% and 50% of project teams with up to 50 skilled workers were reported. One of the largest South African civil and construction contractor noted that labour often opts out of a such a project before being tested, once they find out about the testing requirements. The fall-out rate, prior to testing, was reported to be approximately 30% of planned labour teams. In the course of the interviews, private health care providers who provide medical support to large contractors emphasised the limited and often erroneous understanding of the epidemic among all occupational categories (i.e. irrespective of income or education). For instance, the belief that serial monogamy was a viable safeguard from exposure to the virus was reported as rife⁵. Of note are the overwhelming reports that condom distribution campaigns on site are met with rejection from labour. The rejection is based on the grounds that condoms “cause STD’s”, “hurt women” and “prevent pleasure”.

Construction sector medical aid respondents explained that increases of up to 45% had been experienced in terms of semi-skilled and skilled workers claiming medical costs for opportunistic HIV/AIDS illnesses, such as chronic gastrointestinal infections, pneumonia, skin lesions, and the chronic hospitalisation of dependants. This alarming proportion should be tempered on the basis that the medical aid fund does not cover all construction labour, and that this percentage increase has not been verified by testing or by establishing conclusive evidence.

Evidence of prevalence among semi-skilled and skilled labour is also reflected on the Unions’ provident fund and membership levels. For instance the National Union of Mineworkers’ Construction Industry Benefit Fund has been affected by a marked increase in claims associated with early deaths of natural causes. The construction sector unions approached suggested that prevalence among their members could be as high as 30%. Construction labour unions representatives deplored the inadequate prevention role which employers are said to perform, in particular in respect of education, condom distribution and medical benefits.

Importantly, while interviewees noted that there is ample semi-skilled labour from which to draw, this is not the case in terms of **skilled labour- which is highly sought in provinces where there is currently limited capacity and even beyond the country’s border. Skilled labour is prized for its skills but also for its training and supervisory roles.** A demographic impact on this occupational category in the sector will have both short-term, project-specific impacts, as well as longer-term attrition in the skill base. Interviewees linked this situation to the casualisation of the industry, which has decreased substantially on-the-job training opportunities. In turn, this means that the demographic impact on this occupational category could potentially limit the availability of this kind of labour to the supply systems. This category of labour plays a critical role in supporting the institutional housing supply system, as the aesthetic quality and durability requirements of the supply system require higher construction skills levels than the other two.

While, it was found that semi-skilled labour is relatively easy to source, it is also critical to consider that semi-skilled labour is key to the long-term development of the overall construction skills base- as it is from within its ranks that the future skilled labour is being formed. Therefore, while there is currently a strong supply base for this occupational category alone, the longer-term impact may have a dire impact on the creation of skilled labour over time.

Furthermore, interviewees differentiated between two types of labour: a skilled person who is the sub-contractor, and a skilled person who is in the employ of a sub-contractor. In terms of the latter, the interviewees identified that the impact is felt in terms of a decrease in productivity level per project and an inability to make use of skills. **Where HIV/AIDS illness and death affect the sub-contractors (business owner), the impacts can be drastic. Interviewees reported that where sub-contractors are affected, the loss of construction skills is compounded with a loss in construction management and business skills. This means that the business unit can be annihilated in the process.** This loss also implied an inability to draw on an established business and implementation relationship. Critically this group of delivery agents plays an important role in all supply systems.

⁵ i.e. it is believed that having one sexual partner only (without necessarily using condoms) prevents exposure to the virus (i.e. “1 wife/girlfriend at a time”).

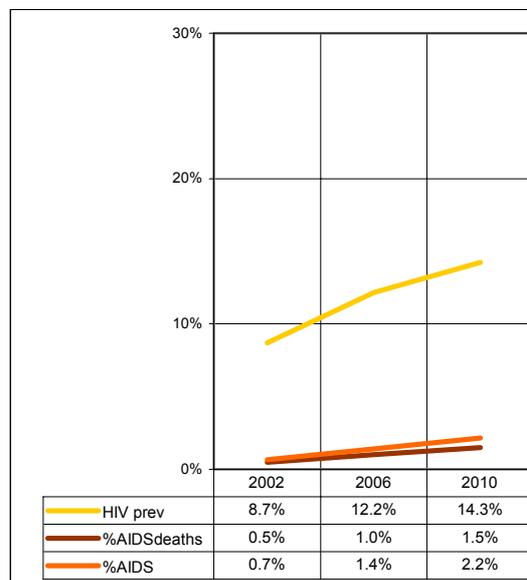
3.3.3 Professionals and technicians on site

Figure 8, opposite, shows that HIV infection levels in this occupational category are set to rise from below 9% in 2002 to 12% in 2006 and just under 15% in 2010.

While the current infection levels are already fairly high, the visibility of the impact of the epidemic is much lower. Indeed, the AIDS epidemic lags behind its HIV predecessor, so that at present both the number of people ill with AIDS and the number of AIDS deaths are less than 1 per hundred persons. These figures are however set to increase to over 1 per fifty and 1,5 per cent respectively in 2010. A further factor masking levels of AIDS is likely to be greater access to antiretroviral drugs in this group, which tends to have higher access to medical aid cover.

The lack of current visibility of the demographic impact of the epidemic was largely reflected in terms of our interviews. In fact, most interviewees firmly believed- perhaps naively- that this occupational category is largely sheltered from HIV by virtue of its education and income level. They explained that although this occupational category is present on site, this presence is intermittent and most are able to go home at night to their families. We found anecdotal evidence of impact- albeit extremely limited among interviewees.

Figure 8: Professionals and technicians on site



Although the current profile of this occupational category is fairly aligned to the demographic profile of the Census, preferential procurement and affirmative action are set to change this profile over time. In particular, the promotion of women in housing, supported in all spheres of government, could substantially increase the proportion of women in this occupational category. Younger professionals and technicians are recruited in the sector, to align with the affirmative action requirements. In turn, this may mean that the projections are optimistic, as the age groups most affected by the epidemic are those currently being promoted in the sector.

This occupational category is not easily available to the low-income construction sector. New graduates of the built environment education sectors (such as engineers and quantity surveyors) often opt to pursue careers in the more upwardly mobile and lucrative financial and information sectors. As a result, even junior professionals who enter the ranks of the construction sector seldom remain so beyond a period of five years. This attrition is translating into increased levels of staff turnover as employees move from position to position in search of more rewarding opportunities. This is affecting all supply systems. In addition, our case studies highlighted that in terms of institutional housing even fewer built-environment professionals currently have the required skills to support the system. This suggests that a demographic impact on this group of delivery agents- even limited to the projections could leave a vacuum.

3.3.4 Professional support

Figure 9 below shows that HIV infection levels in this occupational category are set to rise from 9% in 2002 (1 in 11) to 12% in 2006 (1 in 8) and just under 14% in 2010 (1 in +- 7).

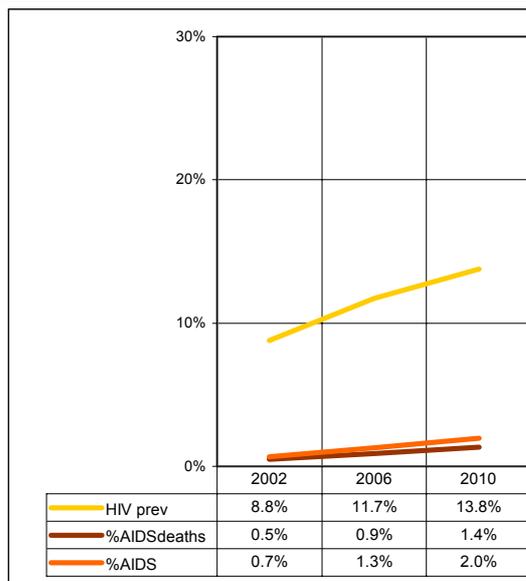
While the current infection levels are already fairly high, much of the demographic impacts in this occupational category are not significantly visible as the projections estimate that currently less than 1 per cent of this occupational category is either ill with AIDS or will die in the year from AIDS. This is set to rise to increase to over 2 per cent and 1,5% respectively in 2010, according to the projections.

This occupational category is one of the most broadly defined of all occupational categories, comprising employees in government, NGO and private sector. It is important to note that, like the professionals and technicians on site, this occupational category has undergone quite significant transformation since the time of the Census. Much greater gender, age and racial diversity is now found in those sectors (except in a few provinces where transformation has not been explicitly sought). Because of this, the age cohorts represented in this occupational category tend to be younger than reflected in the Census data. Again, this suggests that the projections may actually be optimistic, although occurrence of illness and deaths may be moderated by access to more effective medical care, particularly antiretroviral drugs.

In the course of our fieldwork, we realised that line-function heads or operational managers from the organisations interviewed had only very cursory information on the trends in absenteeism, sick and compassionate leave, and as such were not always in a position to reflect on trends in labour health issues. In addition, the same interviewees explained that the reasons for employees not being at work on particular days could include study leave or employees taking up sick leave to avoid taking unpaid leave or using up their annual leave. However, by engaging with human resources personnel we collected a more nuanced perspective. Indeed, because in those types of organisations medical certificates are required to validate sick leave and because the management of leave comprises monitoring activities, we were able to gather evidence- albeit anecdotal- of marked increases in sick leave and compassionate leave over the last three years, especially in those provinces where the epidemic is more advanced. The reasons for sick leave included pulmonary diseases, sexually transmitted diseases, chronic gastrointestinal infections, as well as stress. The former types of diseases were more frequent among lower-skilled employees (especially municipal labourers); while the latter- stress- was extremely frequent among middle and high-ranking officials (which the said officials linked to institutional transformation arising from the latest round of municipal re-demarcation). Interviewees also noted increases in employees going on early retirement because of being “medically unfit” (for which medical tests have to be performed- and the outcome thereof provided to the HR department)- although this has often been abused. Some provincial government officials also noted that burial committee collections to support co-workers affected by deaths in their family had become more frequent and that the lists of obituaries circulated in departmental newsletters had increased significantly. This anecdotal evidence suggests that the impacts of AIDS on this occupational category are already visible.

Importantly, it is within this occupational category that we noted not only existing high staff turnover within given organisations, especially in the NGO and public sectors, but also large provincial disparities in the extent to which specific provinces currently have such resources within their geographic jurisdictions. This is an important consideration if one takes into account the current shifts in policy implementation to support the PHP and Institutional supply systems, which both draw on this occupational category for support. Indeed, not only does this suggest that such capacity will have to be re-directed to those supply systems and provinces (or created where none currently exists) but HIV/AIDS demographic impacts in those areas are likely to aggravate existing capacity weaknesses. During our interviews, we found that currently the skill base for this group of delivery agents is in some provinces extremely limited- as it is primarily experiential. **Irrespective of the demographic impact of the epidemic, the future growth of the institutional supply system is likely to put further strain on the limited skill base available in the sector. Overtime, its skill requirements are likely to be filled- at least in part- with young graduates- whose age represents a risk factor in the context of HIV.**

Figure 9: Professional support



3.3.5 Materials

Figure 10 below shows that HIV infection levels in this occupational category are set to rise from close to 14% in 2002 (+1 in 7) to above 18% in 2006 and 20,5% in 2010 (1 in 5). This occupational category is therefore considered to be one of the highly affected categories.

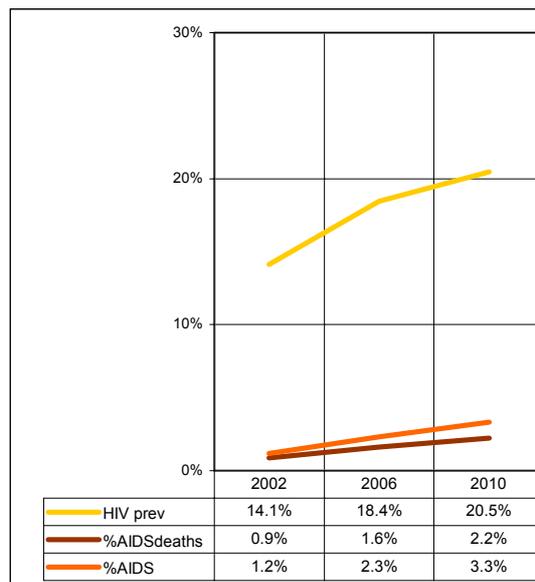
The number of people ill with AIDS in a given year is currently estimated to be approximately 1 per 100 persons in this occupational category, but will rise to just above 3 per 100 by 2010.

AIDS deaths in this category of labour will increase to less than 1 per hundred to above 1 person per 50 in 2010.

This occupational category comprises an entire sub-sector in the construction sector which includes labour categories ranging from factory workers, administration and managerial staff, long distance drivers and truckers as well as sales persons. While we believe that the current demographic profile of the sector is fairly well captured in the Census profile, the fact that this definition is fairly broad means that the extent to which particular sections of this sub-sector will be affected by the epidemic varies. Our interview findings are relevant in providing clues in this respect.

Although materials manufacturers have capital intensive production processes, the size of their labour force is generally much greater than those of other delivery agents. As they tend to be highly institutionalised, their human resources management functions are far more developed than those of other delivery agents. This enables such organisations to track trends affecting labour and in particular morbidity, mortality and absenteeism. The materials manufacturers interviewed expressed a profound concern about their own susceptibility to demographic impact.

Figure 10: Materials



The interviewees were extremely specific in terms of reporting evidence of HIV/AIDS impact on their workforce. One of them explained that 20 confirmed AIDS cases are reported out of a workforce of 14 000 per month. Another company, which has undertaken sample testing from within its workforce of close to 1 000 permanent employees, estimates that close to 20% of its workforce is currently infected. Yet another company noted that although absenteeism levels had increased significantly over the last two years, having undertaken significant institutional transformation, absenteeism levels had again decreased to manageable levels- and therefore the interviewee believed that absenteeism while often related to illness was also linked to ineffective employee monitoring and supervision.

In terms of the transport of materials, interviewees noted that truck drivers are known to be a risk category- especially where they transport goods on long distances. A few interviewees noted that some of their employees had been affected, while a major materials manufacturer explained that a strategic decision was made to outsource the transport function as a result of HIV prevalence among workers. The same company opted to exclude hostel residents from new intakes of workers, after they reviewed the residency profiles of HIV/AIDS affected workers.

In terms of the supply of materials, the perception of prevalence among employees was extremely locality specific. Again, suppliers like manufacturers tend to have fairly formal human resources management systems, requiring *inter alia* medical certificates to validate sick leave and monitoring of absenteeism. While interviewees reported evidence of demographic impact (i.e. AIDS illnesses and AIDS deaths among their workers), especially in those provinces most affected by the epidemic, they appeared to be also concerned with absenteeism related to compassionate leave, which they noted has increased sharply.

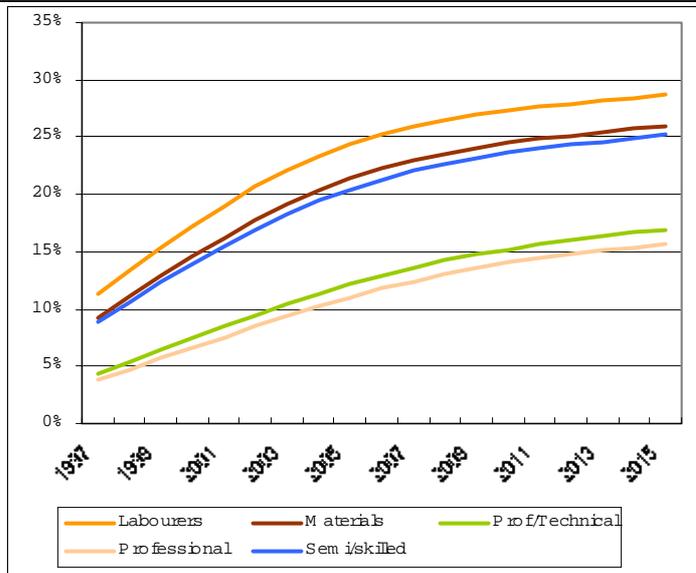
Unlike the other occupational categories, interviewees explained that labour turnover was low, although most manufacturers have tended to downsize their labour pool by recapitalising production. For materials suppliers, ensuring low labour turnover was linked to companies' strategies to avoid the theft of materials and ensuring multi-skilling of employees.

Although this occupational category is likely to be severely affected, it can rely on fairly well institutionalised training systems to recreate skills on an ongoing basis. In addition, most materials organisations interviewed (from manufacturers to suppliers) have extremely well developed multi-skilling mechanisms, lifelong learning and succession planning systems. This means that these delivery agents are among the best prepared to handle the impacts of the epidemic. However, where these impacts affect the transporting of materials this could have a dire impact on individual projects.

3.3.6 Key issues arising from demographic impacts

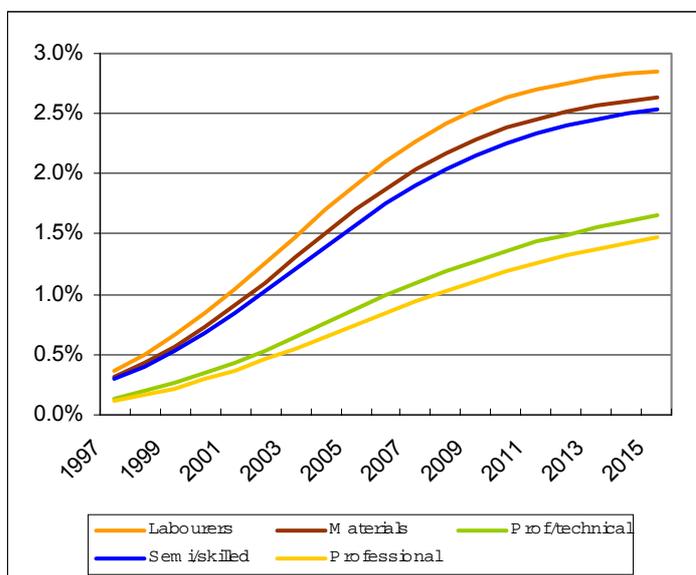
Due to differences in the demographic and socio-economic characteristics of various occupational categories, particularly those created by apartheid; **HIV susceptibility is largely concentrated among lower skilled people. Figure 11 shows that while all occupational categories will be at risk of HIV infection, HIV prevalence will be highest amongst unskilled labour at around 16% or 1 in 6 in 2002 and lowest amongst professional support staff and professional and technical staff on site at around 10% in 2002. Of particular concern is the risk of unskilled labour, whose HIV prevalence is anticipated to reach 20% or 1 in 5 workers by 2006.**

Figure 11: Projected levels of HIV infection by occupational category



Projections by occupational category indicate that the epidemic is concentrated in lower skill groups although all will be affected. Shortages of capacity that exist in some occupational groups may become an even greater challenge than at present. Infection levels among unskilled labour, those employed in materials, and the semi- and skilled labour are projected to be around 50% higher than levels amongst professional support and professional and technical personnel on site. Nonetheless, by 2010, HIV infection levels amongst the professional support and professional and technical categories will have reached around 15% or 1 in 7 workers in the absence of behaviour change.

Figure 12: Percentage of employees dying of AIDS each year by occupational category



AIDS death rates are projected to be around 1% in 2002 amongst unskilled labour, Materials and Semi and skilled labour, rising to 2.7% by 2015. Corresponding rates for the professional categories are 0.5% and 1.5% respectively in the absence of prevention and treatment interventions.

The cumulative impact of HIV/AIDS on the delivery agents is expected to be significant. By 2015, the losses since 1997 will add up to the equivalent of some 30% of the current workforce. Some 10% of professional categories of workers will have been lost, and around 40% of unskilled labour.

Again, while we acknowledge that projections have limitations and should not be considered to be precisely accurate, they nevertheless are likely to adequately reflect the overall levels and trends in impacts to guide planning and decisions-making for delivery as the conclusions drawn are likely to remain valid within a relatively wide band of estimates around those presented in this report. Key issues emerging from the demographic impacts of the epidemic on the occupational categories can be summarised as follows:

- **Unskilled labour** is projected to be the most susceptible to demographic impacts, however, it is abundant and easily replaceable;
- The impact on **semi-skilled and skilled labour** is likely to be substantial, and while there is currently sufficient semi-skilled labour to meet the requirements of the supply systems, skilled labour and especially highly skilled labour is more difficult to source. In addition, where skilled labour is also the sub-contractor, the combination of technical, business management and construction

management skills is extremely rare. This makes the supply systems vulnerable to a demographic impact linked to this sub-category.

- Although the projected impact for **on-site professionals and technicians** appears to be more limited, compared with other categories, the findings of our fieldwork suggests that the projections may be optimistic. In addition, we have noted a level of attrition of the skill base in the construction sector (linked to out-migration from the sector), and in particular in the low-income housing section of the sector. This means that the demographic impact on this occupational category could actually be amplified. However, it could be moderated by greater access to antiretroviral and other effective therapy.
- The projected impact for the **professional support** occupational category appears to be less severe than for other categories. However, in terms of the current application of the supply systems this occupational category is affected by limited institutional capacity. This institutional capacity gap is most pronounced among the NGO, government, housing management institutions and some private sector role-players. It arises from the fact that the specific skills required to perform key roles tend to be combination skills (i.e. finance + construction, or process facilitation + construction management, finance + social development), which are acquired and consolidated on-the-job.
- The **materials occupational** category is likely to suffer a significant impact. Our interview findings reveal, however that this sector is possibly the best equipped to deal with demographic impacts as it has developed strong mechanisms related to institutional capacity building and active management of impacts such as absenteeism that enable the re-creation and maintenance of skills and organisational function.

4 FINDINGS OF THE ECONOMIC ANALYSIS

A clear, common understanding of the expected magnitude of the epidemic and its costs implications, has not thus far emerged for the sector nor its application in the implementation of the housing policy. This hinders development of a coherent policy and planning response to the challenges of the epidemic. The following section set the types of economic impacts that are likely to occur in the sector, and then show results of estimated magnitudes of the costs to the sector and, more specifically, the low-income housing supply systems.

4.1 Baseline assumptions for economic interpretations

The costing approach used generated an estimate of the average extra costs across the sector due to HIV/AIDS in each year. This approach is intended to identify system-wide pressures on the costs of delivering housing which could affect the required housing subsidy applicable to the implementation of each supply system.

Specific aspects of the methodology were the following:

- **Aggregated costs for each occupational category** in the given years were estimated by combining:
 - Demographic projections of AIDS death rates as a proportion of the workforce in each of the occupational categories
 - Estimates derived from fieldwork of various financial costs or loss of work days associated with AIDS illness and deaths.
- The contribution of each occupational category impacts to the total sector costs were **weighted according to wage levels for each category**.
- **Estimates of cost impacts on the production costs**, were generated which specifically excluded the HIV/AIDS related cost impacts on professional support functions which are generally not borne by the cost of the housing product (i.e. government employees, NGO's and housing management institutions).
- **Costs for various delivery agents** were estimated based on the relative proportion of costs contributed by various occupational categories for each type of delivery agent.
- **Costs for each supply system** were estimated based on labour cost impacts of the major delivery agents involved in respective component of each supply system.

The sensitivity of projected costs to different assumptions was tested to assess whether these were likely to affect policy related conclusions.

Details of basic assumptions described below are provided in Annexure E. The following sub-sections provide an overview of the manner in which costs were considered in the modelling exercise.

4.1.1 Direct costs

The main direct costs of HIV/AIDS among sector employees arise from medical and other social benefits (pension, life, disability and other benevolent insurance) for employees.

Direct costs of medical and retirement / risk benefits due to HIV/AIDS among sector employees were quantified based on previous estimates of projected cost impacts of HIV/AIDS on these benefits between 2001 and 2010.⁶ Employment costs for sector employees were assumed to rise in line with those for these employee benefits nation-wide, in the absence of details on the multiple schemes to which sector employees belong. The costs were adjusted according to estimated participation rates in benefit schemes by labour in each occupational category.

In this regard, fieldwork indicated that ***on-site activities (when construction actually occurs) are characterised by minimal formal medical and other benefits. Most of the on-site activities are heavily casualised*** (save for on-site professionals and technicians). Even workman's compensation contributions are seldom made especially among small contractors, although limited benevolent medical assistance to labour is fairly common-place. This assistance is however, seldom monitored. Larger contractors, especially in the civil engineering industry provide limited medical benefits- primarily to core teams of skilled workers. Finally, medical cover is primarily voluntary for the owners of small businesses (developers, small contractors, build environment professionals). As a result, ***the impact of direct costs driven by on-site labour costs on the production costs of housing is likely to be limited.***

⁶ Bureau for Economic Research. The Macro-economic impacts of HIV/AIDS in South Africa. University of Stellenbosch, September 2001.

When we considered the other types of labour involved in the range of components off-site, the picture is very different. In these components, employment relations are considerably more formal and medical benefits tend to be the norm. This is the case for labour employed among government, NGO's, housing management institutions, materials delivery agents, and built environment professionals. Even on-site professionals and technicians are remunerated on the basis of professional fees that include provisions for the costs of medical benefits. As indicated above, the analysis differentiated between those delivery agents whose labour costs are borne by the subsidy (in particular those related to professional fees), and those delivery agents who are not (i.e. NGO's and government employees).

Despite limitations of the methodology and available data to estimate direct costs due to HIV/AIDS, the main conclusions drawn about employee benefit costs in the housing sector seem likely to be relatively robust. Nevertheless, it should be noted that there is significant uncertainty about HIV/AIDS implications for employee benefit costs over the coming decade, particularly in the context of housing sector employees. The nature and coverage of benefits over the decade may change. For example, many employers are already adapting pension and risk benefits to limit costs borne by them. Regulatory and other trends such as shrinking benefits under medical aid schemes, as well as costs and other implications of antiretroviral therapy, could also be important influences that cannot yet be fully anticipated or robustly modelled in the South African context.

4.1.2 Indirect costs

Several types of HIV/AIDS related indirect costs of HIV/AIDS on labour costs in the housing sector were identified and estimated. These include two major categories, productivity costs and costs arising from rehiring and retraining labour. These were further broken down into sub-categories of costs. The following section presents firstly the methodology used in modelling the indirect costs, and secondly the findings of our fieldwork in respect of indirect costs that were used as assumptions to undertake the modelling exercise, per occupational category.

Productivity costs

Productivity costs are driven by:

- **Costs of absenteeism** related to AIDS illness and death were estimated based on the number of lost workdays in each skills category. **Losses due to sickness** were based on statutory entitlements under the Basic Conditions of Employment Act for non-casual employees but the possibility of higher losses was considered in sensitivity analyses. **Losses due to family responsibility or compassionate leave** were based on potential numbers of days (up to 5 per annum) that employees might be absent for these reasons due to HIV/AIDS. For both of these costs, the estimates were adjusted according to the proportion of days of absenteeism expected to be covered by hiring temporary substitutes, over-manning, replacement of informal employees at no net extra cost to production and informal cover at no extra cost.
- **Costs of reduced productivity on the job** included an estimate based on an average 25% lower productivity per work-day over the last six months in employment, followed by a period of lower productivity of new recruits ranging from two weeks among unskilled labour to six months for professionals. These levels of productivity loss are based only on anecdotal evidence and some lower productivity may be reflected in lower remuneration. However, they are likely to give a reasonable indication of cost implications for policy making purposes.
- **Delays due to disruption of critical roles** within the sector with effects on costs for other components of the supply chain were modelled for real *interest payments* on bridging finance, cost escalation of subsidy inputs due to *inflation* and costs of idle *fixed overheads*. Projections were based on the estimated percentage of employees in each skills category who have roles where absence prevents use of labour or equipment/materials modified by a proportion of the "downstream" resource costs that would simply not be commissioned during the period or could be controlled by flexible hiring practices.

Fieldwork indicated that on-site absenteeism and reduced productivity costs are mitigated to a large extent by the fact that the remuneration of on-site labour (unskilled, semi-skilled and skilled occupational categories) is generally performance based (i.e. no-work: no-pay). This means that the cost of absenteeism for on-site labour is not affected by having to pay for temporary replacements, or paying labour that is absent on particular days, or whose productivity is low. Similarly the remuneration of on-site professionals and technicians is also performance based and tends to be fixed (i.e. fee per site). However,

on site professionals' and technicians' fees are based on professional rates that reflect productivity levels (i.e. number of hours or days required to perform a specific task). In turn this means that allowances are made in the professional or technicians' rate for "down-time", such as sick and compassionate leave. In the material occupational category, productivity costs are affected by absenteeism and lower productivity levels. For this occupational category, the costs of absenteeism and reduced productivity can therefore be significant. In the professional support occupational category both sick and compassionate leave is provided for. This means that this occupational category will also be affected by the cost of absenteeism as well as reduced productivity. However, the extent to which the cost of this occupational category is borne by the subsidy is limited. **As such, while labour cost in this occupational category may rise to reflect the cost of absenteeism and lower productivity, the extent to which this factor will affect the subsidy cost of production of housing units per se is limited.**

In the low income housing sector at present, delays due to disruption of critical roles are reported to result in very important costs to delivery agents. These costs are often project specific, but can substantially affect holding costs, escalation in the price of materials and labour, and overheads. The following provides an overview of how these costs are structured.

In the low-income housing sector, holding costs are incurred primarily in terms of the cost of finance and the cost of land. In respect of the holding cost of finance, our fieldwork revealed that this is currently a significant intrinsic vulnerability of the supply systems (especially the developer/contractor supply system). Currently, this vulnerability arises from delays in the processing of claims and drawdown payments. The holding costs of land arise from interest payments and the rates and taxes levied on serviced land. These vary from municipal area to municipal areas and can therefore not be included in the modeling exercise- suffice it to say that they can at times be significant.

Escalation costs currently affect the cost of construction significantly. These are primarily driven by escalation on the cost of production and purchase price of materials and transport, due in particular to increases in the price of raw commodities and petrol. The costs are borne by the party that performs the developer role, contractors, sub-contractors, NGO's and beneficiaries (depending on the supply system). In the low-income housing sector, further cost escalation may occur due to increases in fees payable to authorities (such as connection fees, transfer fees and inspection fees) and professional fees where these are set per unit. However, escalation in labour costs in general are more limited than escalation in materials-related costs.

Overheads are generally borne by all delivery agents and are driven by office costs (full time employees, rentals, etc...), **and on site overhead costs** (salaried labour, equipment and plant, security costs and materials purchased).

Costs of retraining and rehiring the workforce

The costs of retraining and rehiring are driven by:

- **Recruitment cost** estimates include costs of advertising for a proportion of posts plus workdays of administrators and managers consumed in the different recruitment and appointment processes for each skills level.
- **Training cost** estimates include both financial costs of post-employment training provided to replacement employees as well as the estimated number of new employee work-days consumed by training. To some extent, direct costs of training may be absorbed in current levels of skills development levies, resulting in lower net increases in cost.
- Cost implications due to **delays in recruitment and appointment** in various skills categories were also considered. However, there were assumed to result in no net real cost increases to the subsidy beyond those considered in costs of delays discussed below. Nevertheless, they would be expected to have significant costs in terms of ability to deliver target volumes of housing within given time periods. Of note, the total proportion of sectoral workdays lost to appointment delays was estimated to be potentially higher than that lost due to sick leave.

Fieldwork revealed several findings in respect of the cost of sourcing, retraining and rehiring labour per occupational category which informed the projection of costs.

- **Unskilled labour:** Current local labour procurement practices are already characterised by high levels of labour turnover as labour needs to be sourced and trained on a project by project basis. In addition, interviewees noted that attrition of labour on site is frequent (especially after pay-days). Currently, training of new employees was reported to translate into a cost per worker of between R 150 and R 350.

Although there is an abundance of available labour, procurement needs to be managed tightly and generally requires the setting up of labour desks, assisted by community leadership.

- **Semi-skilled and skilled labour:** Semi-skilled labour is often sourced from the local community and also receives training at the onset of projects. Interviewees noted that currently, semi-skilled labour is fairly abundant. Much greater concern was expressed in respect of skilled labour, whose skills are acquired primarily on-the-job (with prior formal education- through learnership and apprenticeship). The combination of experiential and formal skills acquisition means that this category of labour is more difficult to source. In particular, where skilled labour is the sub-contractor, the combination of trade-specific skills, construction management and business management skills is scarce. This means that sourcing quality sub-contractors (the emphasis here is on quality) is currently arduous.
- **On-site professionals and technicians:** in this occupational category, not only are skills acquired formally (through tertiary education and in-service training) and experientially but out-migration from the low-income housing sector to other construction sector and other economic sectors is high. This means that sourcing labour for this occupational category can be extremely difficult. In addition, the recruitment process is generally formal and entails both advertising, interviewing and legal costs; however, a significant proportion of recruitment appears to be through word of mouth and informal networks. In the government sector, recruitment processes are often hindered by inefficient bureaucratic procedures.
- **Professional support:** in this occupational category, the key decision-making professionals not only have tertiary education but also require strong experience, that entails intimacy with the complexities of the housing implementation systems, regulations and procedures. This occupational category typically requires individuals with a combination of different skills (for instance, construction and financial management or social processes and construction). This makes this occupational category particularly difficult to source. In addition, similar recruitment procedures are required for this category as for the on-site professionals and technicians.
- **Materials occupational category:** In this occupational category, we differentiate between manufacturing, transport and supply. In all three fairly institutionalised training mechanisms can be drawn upon, and although training systems are primarily job-specific they are short and fairly accessible.

4.1.3 Limitations

The estimates of cost impacts which have been produced are likely to give a reasonable indication to planners of the potential scale and relative importance of various HIV/AIDS costs affecting subsidy requirements. However, policy makers and planners should use the estimates with due recognition of their limitations. In addition to understanding the assumptions noted above, several other limitations on accuracy and completeness of the estimates should be recognised. These include the following.

- **Limitations on demographic and cost data.** These particularly affected estimates for each delivery agent and each supply system, where potentially simplistic extrapolations from the projections were required.
- **Average cost projections at sector level hide many projects and delivery agents where costs may be much higher than average,** with potentially severe implications for delivery and role players.
- **Diversity of supply systems and provincial circumstances.** The sector is characterised by wide diversity in organisation and function of delivery agents and projects between and within provinces. These could not be captured in modelling and this makes it difficult to assume that the cost estimates can be applied in all circumstances.
- **Demand factors.** Impacts of HIV/AIDS on beneficiaries and their households have not been incorporated in the costing, but may influence potential for cost recovery and the mobilisation of social capital, and have financial implications if, for example, they delay payment to contractors (as in the case of beneficiary absenteeism).
- **Antiretroviral or other highly effective treatment.** Modelling of indirect costs does not consider the potential effects of ARV treatment. Particularly for higher income skills categories, increased treatment rates may reduce the significance of costs other than medical care. However, this is unlikely to substantially change the relative importance of various cost components or overall magnitude to be borne by the subsidy, apart from uncertainties about implications for medical and other benefit costs already noted above.
- **Inadequately captured costs.** Among these are:
 - **Costs of delays in delivery.** The methodology only considers these where they could clearly be assumed to lead to quantifiable real cost increases in terms of interest payments for bridging finance or through overhead costs of idle capacity whose costs are fixed. This does not capture social and political costs of such delays. It also does not reflect potential effects if they systematically lead to exit of key delivery agents from the sector, with potential to reduce competition or efficiency, and resulting cost or quality implications.

- **Cost impacts of cumulative attrition of skills and delivery agents on market wages/prices and capacity.** The sector could over time be affected not only by loss of skills and agents within the sector, but also by greater casualisation with reduced skills transfer, and AIDS-related skills shortages in other sectors which then attract construction sector role players.
- **Other social costs.** Many costs, particularly affecting labour that is replaced, are assumed to have no net impact on sector or subsidy costs, but are borne by sector employees who lose employment and are not supported in dealing with HIV/AIDS impacts.
- **Macro-economic and fiscal influences.** HIV/AIDS may increase pressure for diversion of government resources to sectors such as health and welfare, at the expense of housing. These influences and possible systematic macro-economic effects of HIV/AIDS (eg on market wages, inflation and poverty) have not been systematically incorporated in the costing.

4.2 Results: Impacts on costs

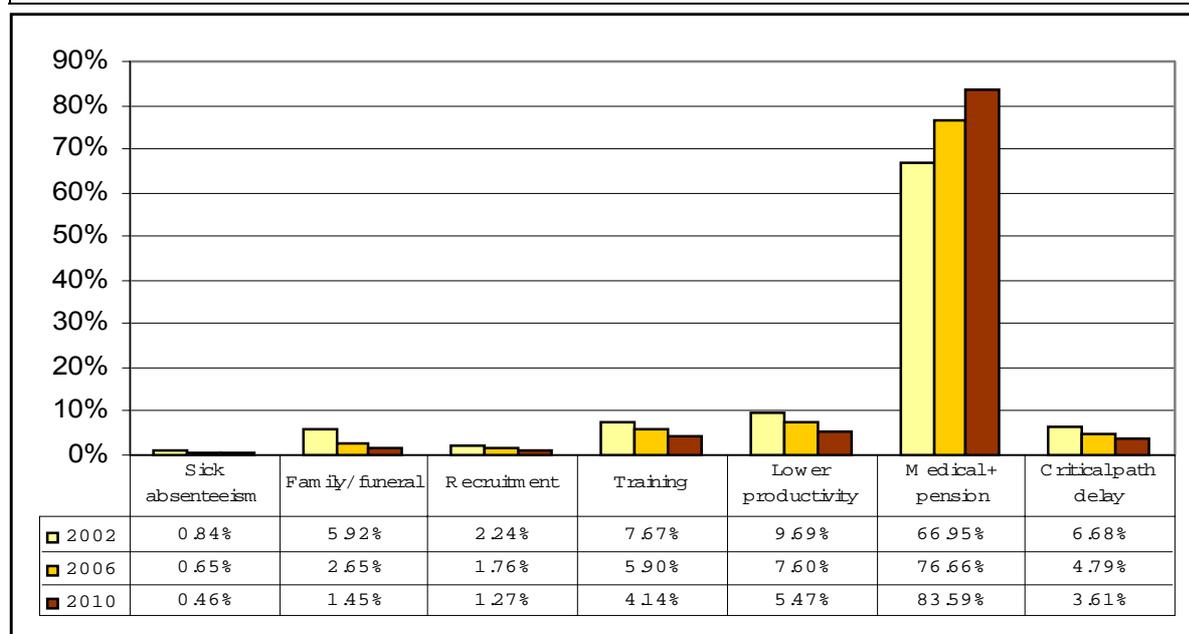
The following section presents the results of the modelling exercise based on the inputs discussed above, including:

- The relative contribution of various direct and indirect costs to the cost of housing products;
- The impact of HIV/AIDS on overall costs of the sector and cost of housing products (and inter alia the use value of the subsidy);
- The impact of HIV/AIDS on labour costs by occupational category;
- The vulnerability of the delivery agents to direct and indirect costs;
- The impacts per supply system in terms of extra costs of production arising from HIV/AIDS costs;
- Important considerations arising from derived/knock-on impacts on the supply systems; and
- Considerations of intrinsic vulnerabilities of the supply systems in relation to the extra costs of HIV/AIDS.

4.2.1 Contribution of various direct and indirect costs to the cost of housing products

Figure 13 illustrates the relative importance of various direct and indirect HIV/AIDS costs that affect the subsidy requirement over the decade. The pattern is quite consistent over time and relatively insensitive to changes in assumptions. However, health and other benefit costs are increasingly important (from 67% to 83% of extra sector costs), reducing the proportion of costs contributed by other costs, even although the actual value of other costs increases over time.

Figure 13: Percentage contribution of various direct and indirect costs to the cost of housing products (Low estimates)



The significance of medical and retirement/ risk benefit costs is driven by several factors. These include: the large magnitude of expected increases in these costs. Medical costs are driven by trends in the whole medical aid sector (not just housing); and the relatively large proportion of sector employees that fall into categories that can access benefits (in particular in the on-site professionals and technicians, professional

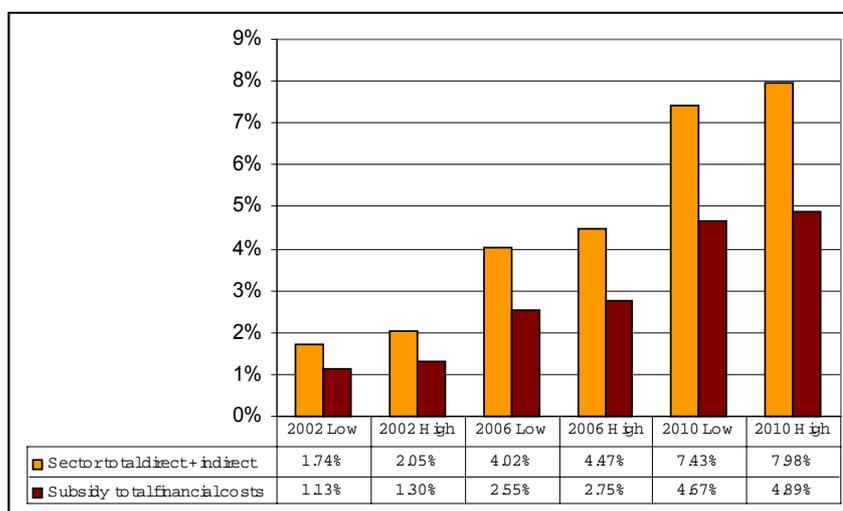
support and materials occupational categories). **The relatively informal nature of employment of many workers means that the indirect costs of HIV/AIDS impacts among them is limited. The finding is consistent with studies in other settings which indicate that where medical and other employee benefits are available, these are often the dominant cost factors related to HIV/AIDS.**

Among indirect costs, the most significant are lower productivity due to illness and time taken to reach full productivity after appointment (from 10% in 2002 to 6% in 2010 of extra sector costs), training (from 8% to 4%), and delays due to disruption of critical functions (from 7% to 4%). The costs of delays are due mainly to increased overheads due to idle capacity in sector components with more formal employment, with relatively small contributions by costs of interest and inflation. **This relatively small contribution of the costs of delays does not negate the importance of these in the current housing environment but suggests that the additional burden of HIV/AIDS will be limited.** Ill health absenteeism itself contributes a relatively small proportion of costs, with absence due to funerals and family responsibility being potentially more important if they are not closely managed. This finding seems consistent with fieldwork findings and reports of experience in other countries with more advanced HIV/AIDS epidemics.

4.2.2 Impact on overall costs of the sector and cost of housing products (and inter alia the subsidy)

Figure 14 shows the estimated total direct and indirect costs of HIV/AIDS on the sector as a whole and on components that are likely to affect the cost of housing products (and in turn financial viability of the subsidy). This is expressed as a percentage of total workforce costs. The major difference is due to exclusion of professional support staff from the subsidy amounts. Their costs are not generally borne through the cost of the housing product (mostly in terms of the subsidy), although their costs will need to be borne by government from other budgets, or by donor funding and/or through cost-recovery where this occupational category is drawn from NGO's and housing management institutions.

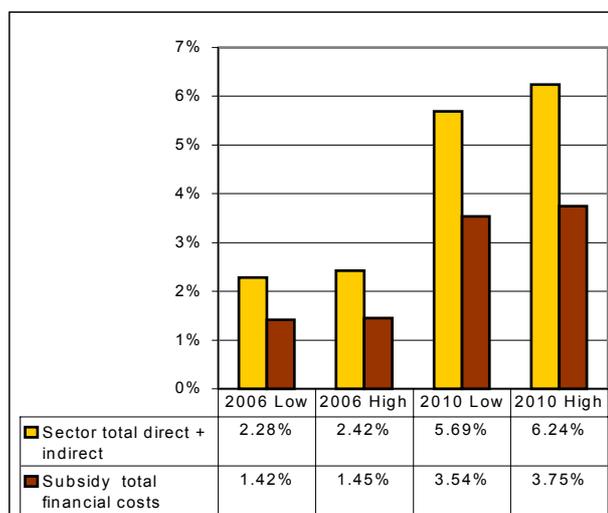
Figure 14: HIV/AIDS related costs as % of total workforce costs from 2002 to 2010



Costs being absorbed in 2002 are already estimated to be fairly substantial. **Figure 15 shows estimated costs that will occur over the decade above the levels being experienced in 2002.**

Figure 15: HIV/AIDS related cost increases as % of total workforce costs over 2002 levels

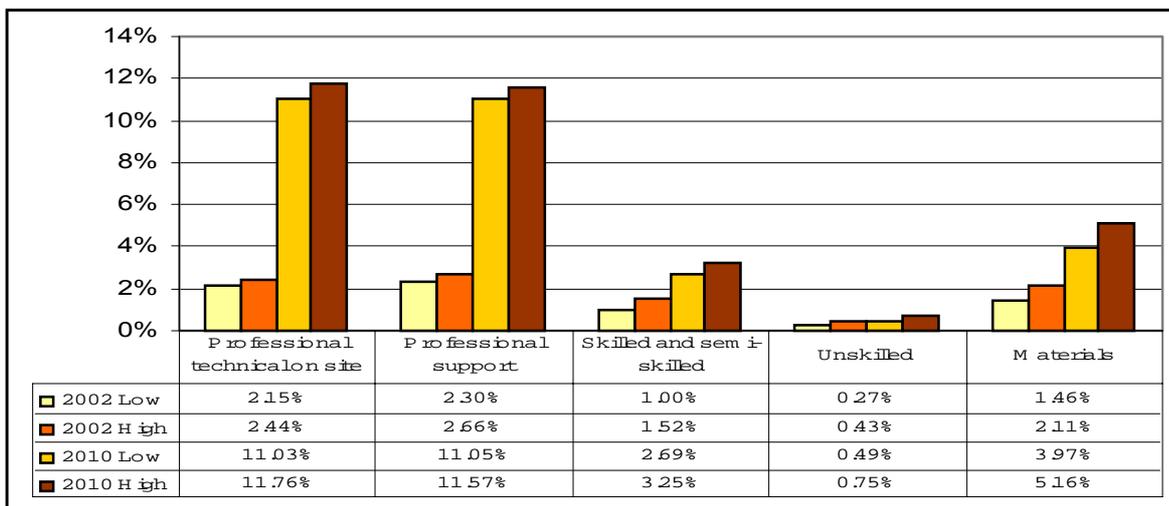
The results suggest that, assuming that current projected levels of HIV/AIDS costs have been absorbed by the cost of production of the housing product (mostly the subsidy amount) already, the extra costs born by the housing product, to be anticipated are significant (1.45% by 2006 and 3.75% by 2010) but relatively limited and manageable with appropriate planning.



4.2.3 Impact on labour costs by occupational category

Figure 16, below, illustrates the **potential costs of HIV/AIDS by occupational category as a proportion of labour costs in each category**. This relates to the additional cost of remunerating the workforce in each occupational category, brought about by the direct and indirect costs of HIV/AIDS. Professional categories with access to benefits will potentially experience the largest increases in the cost of the workforce (up to 11% by 2010), followed by other categories with significant numbers of employees with relatively formal employment and access to various benefits (especially the materials category up to 6% by 2010).

Figure 16: Total sector costs due to AIDS by labour category as % of remuneration of category

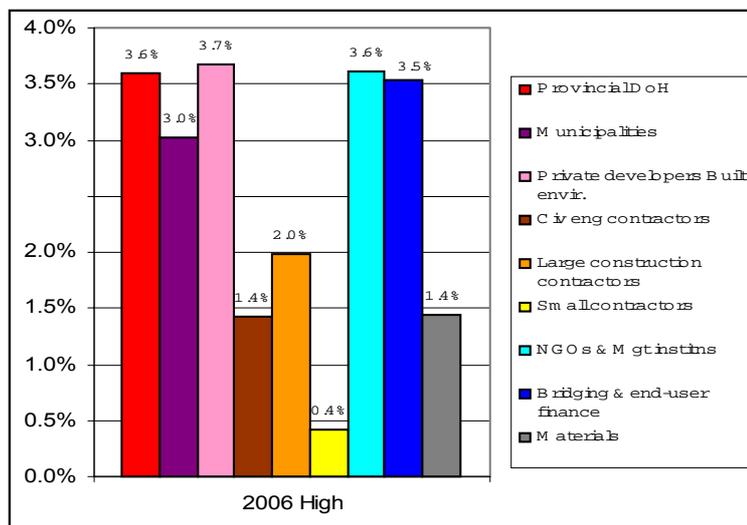


4.2.4 Vulnerability of delivery agents to economic impact

The vulnerability of each delivery agent to cost increases differs according to their employee profile and conditions of employment. Figure 17 illustrates the various delivery agents that are more and less exposed to cost increases.

The figure illustrates that the delivery agents that are most susceptible are those with relatively highly skilled employees, formal employment practices and access to medical and other benefits. Those that employ relatively large numbers of employees on an informal basis with limited benefits are less susceptible to cost increases.

Figure 17: Additional HIV/AIDS costs by delivery agent as % of workforce remuneration of agent (2006 high relative to 2002)- high cost estimates



4.2.5 Impacts per supply system

Estimated increases in the cost of delivering housing units above 2002 costs are shown for the three supply systems in Table 10. These consider the HIV/AIDS related labour costs to various occupational categories and delivery agents, as well as the estimated proportion of costs in each part of the process that are non-labour costs (i.e. capital costs).

This table should be used as an indication of potential extra costs per unit for each system based on an interpretation of the extra cost which the epidemic will have on the cost of labour overall. Therefore, its content should be approached with caution. Key issues to take into consideration for interpreting the table include:

- Significant provincial (and even municipal) variations exist in the application of each supply system. Those affect the respective share of each component to the cost of production (refer to relevant provincial annexures);
- The percentage increase for the PHP system are based on an application of the system on serviced sites. Where projects need to occur in greenfield sites the related economic impact on the land assembly and planning and servicing components would also accrue to the total extra percentage contribution to the cost of the supply system;
- The percentage increase for the developer/contractor is based on a greenfield application of the system; where it is applied in-situ we believe that the costs could potentially be higher as the service component contributes a high proportion of extra costs;
- The impact of the epidemic on beneficiaries whose contributions are critical for the financial sustainability of the institutional supply system (in terms of cost-recovery of the housing management and end-user finance components) has not been factored into the calculations;
- The calculations assume that labour costs of institutional role-players in government, NGO's, and housing management institutions are not borne by the cost of production of the housing products.
- Extra HIV/AIDS related costs of non-labour inputs to each stage of the process have not been completely factored into the increases, particularly in the case of servicing, due to lack of data related to the cost drivers for non-labour inputs. Crude estimates were generated, assuming that costs of these non-labour inputs are driven by materials component cost increases or estimated Producer Price Index (PPI) increases due to HIV/AIDS. These suggest that non-labour inputs could add around 0.3% (2006) and 0.5-0.9% (2010) to the cost of delivery in the institutional and developer/ contractor systems. This suggests that efficiency of current mechanisms which assess and adjust subsidy cost estimates yearly to allow for materials cost inflation will be increasingly important.

Table 10: Estimated extra costs due to HIV/AIDS above 2002 costs for each supply system

Supply system	Component of supply process	Land assembly + planning	Bridging finance	Servicing	Top structure Construction	Top structure Materials	Total extra % increase to cost	Current average unit cost (R)	Average extra cost/unit (R) *
Developer/contractor	Current cost structure	5%	2%	34%	11%	48%		18,250	
	% increase due to component 2006	0.12%	0.07%	0.19%	0.06%	0.14%	0.58%		105
	% increase due to component 2010	0.28%	0.18%	0.50%	0.19%	0.29%	1.44%		262
PHP	Current cost structure	1.5%	1%	0%	9%	89.5%		9,500	
	% increase due to component 2006	0.09%	0.03%	0.00%	0.15%	0.39%	0.66%		63
	% increase due to component 2010	0.21%	0.09%	0.00%	0.47%	0.83%	1.60%		152
Institutional	Current cost structure	10%	2%	28%	16%	44%		75,000	
	% increase due to component 2006	0.31%	0.07%	0.22%	0.2%	0.12%	0.95%		711
	% increase due to component 2010	0.75%	0.18%	0.55%	0.7%	0.26%	2.45%		1 837

* 2002 prices

The results suggest that the overall impact of HIV/AIDS on subsidy requirements for costs of all supply systems will be moderate to 2010, and potentially manageable.

The institutional model is more vulnerable to both proportional and absolute increases in costs. In addition, it is possible that effective subsidy costs will be further increased due to reliance of the system on cost recovery, which may be more difficult as more households become affected by HIV/AIDS.

Although the developer/contractor model of supply appears more vulnerable to absolute cost increases than PHP, this may be deceptive. Costs of servicing are currently assumed to be met from other sources in the PHP model. If these are included in total supply costs, the difference in extra costs may well be much less marked between the PHP and developer/contractor model.

4.2.6 Derived/knock-on impacts on supply systems – further important consideration

The following section provides an overview of knock-on/derived economic impacts on the supply systems that may arise from the impact of the epidemic on occupational categories and the delivery agents involved in them. These impacts would often be project-specific. The severity of their impacts at this level, which could at times result in breakdown of projects, are not adequately reflected in the projections at sectoral level, which indicate average levels of impact across the country. In addition, certain of these costs are related to impacts of HIV/AIDS on beneficiaries. This dimension was not included in the scope of the project or modeling, but needs to be highlighted.

We identified these impacts in the course of our fieldwork- particularly during the case studies. They are primarily itemised per supply system. In this report, we document the most important knock-on/derived impacts. However, because housing policy implementation occurs through supply systems of inter-dependent components and delivery agents no delivery agent is potentially immune from knock-on/derived impacts. In addition, we anticipate that **all systems would experience a knock-on/derived impact from both demographic and economic impacts on two key delivery agents, the materials manufacturers and suppliers and institutional role-players in government who are responsible for the management of the subsidy scheme and the planning system.**

Derived/knock-on impacts on the developer/contractor supply system

The impact of the epidemic on beneficiaries is already having a knock-on impact on developers. This cost is driven mostly in terms of beneficiary absenteeism at the time of handing over of properties. The remedial action involved in this situation combined with the holding costs of the top structure means that beneficiary absenteeism can cost up to R 1 600 per site. In addition, we noted in the course of our fieldwork that the epidemic is also affecting the cost of beneficiary administration overall.

Because this system is particularly vulnerable to inefficiencies in the financial management of the subsidy system, developer and contractors are both vulnerable to a demographic impact of the epidemic on the provincial and municipal delivery agents (professional support occupational category). Where bridging finance is secured for on site activities, this vulnerability is even more pronounced.

The impact of the epidemic on contractors means that productivity levels on site could potentially be affected where skilled labour suffers demographic impacts. The supervisory and management skills are extremely critical to timeous implementation and quality controls. Where these are compromised the range of economic impacts explored in the section dealing with the cost of delay would apply.

Derived/knock-on impacts on the PHP supply system

The PHP model relies extensively on the involvement of beneficiaries in all aspects of the housing development process. The impact of HIV/AIDS on the system is critically intertwined with the demographic and socio-economic impact (more than economic only) impact of the epidemics on beneficiaries, their households and communities. At the settlement level, HIV/AIDS has also been identified as a factor of social stress and disengagement of affected members from the movement. This pressure overlaps pre-existing stresses of poverty and lack of access to basic social and economic services. In such contexts communal saving, learning and building becomes threatened by individual concerns for self-preservation. A nominal portion of the subsidy goes towards securing the cost of labour. This is made possible by the extensive involvement of households in the construction process. Our fieldwork suggests that up to R 450 can be saved from the costs of production through sweat equity. Further, in terms of the increased subsidy amounts introduced in May 2002, where households opt not to follow the PHP process, they are required to make a financial contribution of R2 479. We believe that this nominal amount may only provide a partial indication of the cost of social capital. In fact, our case study findings suggest that the full extent of the roles performed by beneficiaries in the course of PHP processes is critical to the implementation of housing projects.

Further, the bulk of the monetary transactions involved in the systems' implementation are linked to the purchase and transport of materials. Typically, this makes the system highly vulnerable to an indirect/"knock-on impact" arising from cost impacts on materials manufacturers and suppliers.

Impacts on the institutional supply system

Finally, our fieldwork demonstrates the economic vulnerability of the institutional supply system to the long-term demographic impacts of HIV/AIDS on the beneficiaries, both in terms of their social capital and financial contributions. Most projects are arguably too recent to reveal a demographic impact at present (although we are aware of problems arising in housing institutions in KwaZulu Natal). Given that financial contributions are perpetual (even if they decrease substantially after the repayment of the loan), a longer-term perspective on the demographic impact of HIV/AIDS of beneficiaries raises the possibility of a significant challenge to the financial viability of the system in the context of a strict cost recovery approach.

In addition, more than any other supply system, the institutional supply system relies on highly specialised contributions from built environment professionals to meet the quality requirements of the housing products developed in the institutional supply system. Some of these organisations are pioneering new tenure forms and championing legal reform to support the development of institutional housing processes. To perform this role, they also rely on the support of a handful of specialised legal experts who have built their knowledge of the sector over the last decade. Losing access to such scarce resources would greatly undermine the ability of these institutions to perform their role. In spite of this awareness, these organisations have not yet developed strategies on how to address the impact of HIV/AIDS on their own institutions.

4.2.7 Considerations of intrinsic vulnerabilities of the supply systems in relation to the extra costs of HIV/AIDS

While the impacts of HIV/AIDS will contribute to raising the cost of production of the supply systems, it is important to put these in perspective by considering the substantial intrinsic vulnerabilities currently affecting the implementation of the housing policy. These vulnerabilities relate to the limitations of the supply systems themselves and of the delivery agents who implement them, and to contextual factors (in particular provincial dynamics) in which the systems are implemented. These vulnerabilities have the effect of delaying project approval and implementation and subject project costs to escalation (typically aligned to the Core Producer Price Index), raising the holding cost of land and finance as well as subjecting delivery agents to increases in the proportional costs of their overheads, irrespective of HIV/AIDS impacts. The following section refers briefly to the intrinsic vulnerabilities of the supply systems affecting housing policy implementation. Over and above these intrinsic vulnerabilities, provincial vulnerabilities exist, which are detailed in the relevant provincial annexures.

Intrinsic vulnerabilities of the developer/contractor supply system

The key intrinsic vulnerabilities of this supply system include:

- A shift in implementation throughout the country to promote the involvement of municipalities as developers. This is occurring in a context of historically limited municipal capacity (aggravated since the recent re-demarcation process). In the course of our fieldwork, we were made aware that this has had the effect of delaying projects substantially- at times up to an entire year. Until municipalities have developed adequate institutional capacity, it is likely that the implementation hurdles will continue hampering project implementation.
- The profit motivation of this supply system which limits its ability to absorb disruptions in implementation. This is particularly significant given the profit margins in the sector are low. Where such disruptions occur and private sector operators realise that their expected profits will not be met, it is not unlikely for them to step away from ongoing projects.
- Extreme vulnerabilities of the land assembly and planning component to the operations of the land market and delays in planning system, which can lead to substantial delays in project implementation (and in turn subjects projects to escalation).
- Substantial increases in service standards by municipalities (in most provinces) which can be extremely difficult to meet within the limitations of the subsidy.
- Extra training and supervision costs associated with the implementation of the local labour procurement requirements (on average between R 150 and R 350 per worker). These costs are not provided for by additional financial resources. As a result, they are actually borne by the subsidy.
- Frequent increases in the cost of manufacturing and transporting materials (that follows the Core Consumer Price Index- approximately 8% per annum).
- Delays or obstacles in the approval of claims and subsidy draw downs leaving delivery agents open to major financial risk. This was particularly emphasised in the course of our fieldwork as a cause of financial bankruptcy.
- Irregular calls for proposals and procurement for this supply system which has hampered the ability of developers, contractors and sub-contractors to generate regular work, and sustain their operations.

Intrinsic vulnerabilities of the PHP supply system

The key intrinsic vulnerabilities of this supply system include:

- Its reliance on the ability of households to mobilise and participate in the supply of housing.
- Its reliance on support skills that combine social process facilitation and construction management skills and which are not easily available.
- The complexity of implementing this system on land that is irregularly settled which can incur substantial additional costs. This was made evident in the course of the Piesang River case study, where delays in the regularisation process had stalled the processing of subsidies, and in turn prevented households holding uTshani loans from retiring their loans.
- The shallow institutional base for PHP housing delivery which make the system vulnerable to the disruptions caused when particular individuals move out of their posts or even go on leave
- The long lead-time which this system requires, which make it highly vulnerable to escalation in the price of materials. In the course of our fieldwork, preparation periods of up to three years were reported.

Intrinsic vulnerabilities of the institutional supply system

The key intrinsic vulnerabilities of this supply system include:

- Its reliance on the setting up of Housing Management Institutions. This means that institutional capacity is required. In most provinces this capacity is glaringly lacking. In addition, the only two sources of funding to provide for the start up costs of such institutions are municipalities and NGO's.
- The experimental nature of institutional housing projects. Their long-term financial viability is still to be established. This is particularly relevant if one considers the requirements for ongoing financial contributions from beneficiaries, whereby a 90% cost recovery needs to be achieved on a project by project basis. This leaves the system open to worsening economic conditions among its beneficiary base.
- The historical background of rent and bond boycott means that sourcing end-user finance for the system is often difficult.
- Although the system is designed to develop housing products of a higher value than the subsidy, its costs need to remain within the bounds of beneficiary affordability.

Overall it is important to note that often the intrinsic vulnerabilities of a particular supply system currently are similar to those that are expected to result from the impacts of the epidemic. For instance, the cost of local labour requirements highlights the cost of retraining and rehiring for the unskilled occupational category. Secondly, HIV/AIDS impacts are likely to exacerbate current intrinsic vulnerabilities. For example, the current delays experienced in the processing of claims could potentially become even more pronounced. Finally, it is important to consider that in the short-term, systemic intrinsic vulnerabilities are likely to have greater economic impact on the viability of housing supply than the impact of HIV/AIDS on the cost of production of housing. Comparing the effect of the extra cost burden of HIV/AIDS on the different supply systems over 2002 prices (and which range from 0.95% to 0.66%) with that of other extra costs arising from delays in the implementation of projects is particularly telling. Indeed, although the escalation in the price of materials is intended to be captured in the JBCCPAP formula which provides for an average year on year escalation of 7,5%, this is seldom a reflection of real increase which far exceeds this rate. Materials' price escalation has severe impacts on the financial viability of housing projects. Where such projects are delayed, then the effects of escalation can be drastic- as prices are often quoted "fixed", and contracts awarded to the lowest bidder. Delays also affect the ability of delivery agents to shoulder the cost of finance. This is currently a major area of concern, which continues to make the housing environment a particularly risky one- irrespective of the impacts of HIV/AIDS.

4.3 Conclusions - Key issues arising from economic impacts and limitations

Key issues emerge from the economic impact are as follows:

HIV/AIDS will result in systematic costs over the next decade but it does not seem likely to be a dominant cost driver of subsidy requirements. Other existing inefficiencies, delays and cost drivers in the sector are likely to be more significant in most years.

However, management of HIV/AIDS effects on supply costs is warranted as:

- HIV/AIDS is likely to be a sustained cost influence on the sector. Indeed, HIV/AIDS could increase total workforce costs by up to 4,5% by 2006 and 7,98% by 2010 (high estimate).

- The average cost projections at sectoral level hide many projects and delivery agents where costs of delays or loss of key skills will be much higher than average. In a significant minority of projects these costs may lead to provider bankruptcy, non-initiation or non-completion of projects, or substantial delays in delivery.
- Projected average cost levels are a significant risk problem for providers in a sector that is reported to provide limited profits (7% on average).
- Smaller scale delivery enterprises may well be at higher risk of serious disruption if key employees are affected, even though less formal labour practices may protect them from some other impacts. Thus HIV/AIDS may undermine policy to promote small and medium enterprises.

In the short term many costs may not impact on the subsidy due to effective capping of the subsidy. However, underlying cost increases can be expected to lead to declining quality of housing provision and slower delivery if they are not matched by subsidy increases.

- HIV/AIDS tends to exacerbate problems driving costs and capacity for housing provision (in terms of attractiveness of participation in the housing market) that already exist. Addressing HIV/AIDS issues will often help to address these, and vice versa.
- HIV/AIDS is likely to increase costs of the institutional supply system more than the PHP and developer/contractor supply system.

Finally, the level of casualisation of the sector hides the range of significant social costs which HIV/AIDS will have on the low-income housing workforce. Many costs, particularly affecting labour that can be easily replaced are assumed to have very limited impact on sector or product costs. However, these would be borne by sector employees who loses employment and are not supported in dealing with HIV/AIDS impacts. While casualisation may be seen as a buffer against HIV/AIDS costs, it could also fuel the cumulative attrition of skills and delivery agents.

5 IMPLICATIONS OF RESEARCH FINDINGS FOR THE IMPLEMENTATION OF THE HOUSING POLICY

The following section presents the findings of our research for the implementation of the housing policy by considering firstly the implications of the demographic and economic impacts for the future application of the supply systems. Secondly, we present our analysis of the provincial impacts from a national perspective.

5.1 Implications for the future application of the supply systems

The supply systems and the delivery agents whom they mobilise are different. Therefore the manner in which they are affected by the impacts of the epidemic also differs. ***A variety of housing delivery options is an important principle of the housing policy, which should be upheld and made provincially as well as locally specific. Therefore we would strongly discourage against an assessment of the virtues of either supply system on the basis of the impacts of the epidemic alone.*** Our approach is therefore to identify the positive aspects of the supply systems and their vulnerabilities in a context of HIV/AIDS impacts, so that their provincial and local application occurs in a way that maximises their positive aspects and addresses their vulnerabilities.

5.1.1 Developer/contractor supply system

The developer/contractor supply system operates according to a financial logic of profit maximisation. In the current context of the construction sector, this means that operational and institutional leanness and efficiency is a pre-requisite for survival. This translates into practices of risk avoidance and the need to remove superfluous operating and capital costs. Under such conditions, the ability of role-players to accommodate the cost burdens associated with the demographic and economic impact on themselves and on others within the system is severely restricted.

In particular, the demographic and economic impact of HIV/AIDS on specific components and delivery agents whose contributions is critical to ensure that the supply system operates effectively, needs to be re-asserted. This concerns:

- ***The role of government role-players in facilitating and regulating the implementation of the supply system (both in terms of the subsidy administration and the land assembly and planning roles);***
- ***The availability of bridging finance to resource the supply system;***
- ***The attrition in the specific skills profiles required to implement the construction process efficiently; and***
- ***The extent, to which the rigidity and specificity of the system, with respect to required process and product, limits its ability to absorb or accommodate an economic impact.***

Firstly, the system is extremely reliant on the effective functioning of the subsidy administration system. This role affects the ability of developers and contractors to afford the cost of bridging finance, the financial viability of specific projects and more importantly for the system, the ability of those delivery agents to continue operating in the field. In the absence of a targeted Provincial response to existing inefficiencies in the performance of this role, it is fairly reasonable to expect that the demographic impact of HIV/AIDS will exacerbate the weakness of this role.

Similarly, capacity shortages in the land assembly and planning component, which currently lead to costly delays, would be further aggravated thereby increasing the cost of finance, holding costs on land, overhead costs of companies and escalation on the cost of materials and labour. These would have the net effect of squeezing profit margins for developers and contractors, which would have a compounded impact, *inter alia*, on their ability to repay their bridging loans.

The exposure levels experienced by bridging finance institutions themselves, in particular parastatals, mean that they are extremely vulnerable to direct and indirect economic impacts on their client base. In the short-term, this may result in financial losses, although it is expected that these institutions would adjust their lending practices to avoid risk. This typically involves opting to shun a particular market, something most private sector organisations have already opted to do in respect of the low-income housing supply systems. Alternative coping mechanisms would include managing risk by shortening the duration of loans, and raising interest rates. Given the already fragile ability of borrowers to meet existing lending conditions, and still make a profit, this scenario would have a devastating impact on the ability of the developers and contractors to continue performing their role.

In and of itself, the emphasis of the supply system on labour-intensive production for the top-structure and on capital intensive production for servicing sites and the manufacturing of materials is not a reliable indicator of economic vulnerability to HIV/AIDS economic impact- because of the casual nature of employment. Rather, the nature and availability of specific key skills to perform pivotal roles in the components of the supply system, is a greater benchmark of economic impact vulnerability. Importantly, in the developer/contractor supply system those skills are already in short supply and delivery agents operating in the system have to compete with other construction sub-sectors to secure their contribution. This means that labour mobility and migrancy, two key risk factors of susceptibility of a demographic impact of HIV/AIDS, within those skills profile is high.

The widespread and ongoing process of casualisation of labour, which has affected the construction industry since the mid-1990's is seen as a survival strategy for private sector operators who strive to reduce their wage bills. Casualising labour further is one of the key responses to a direct cost to company of HIV/AIDS impact of labour. While this type of response may shelter companies in the short-term, it would only aggravate the attrition of skills necessary to implement successfully the supply system.

The developer/contractor supply system is the most rigid of all three systems. Because it is primarily implemented through the project-linked subsidy, it has to comply with the limitations of the subsidy. Even taking into account the increased subsidy, some of our interviewees reiterated that the profit margins in the sector are so low that they would continue divesting from it. This means that the costs to delivery agents and components cannot easily be passed onto the subsidy. Although the credit-linked subsidy option may provide an opportunity to leverage additional resources for beneficiaries to complement the subsidy amounts, household affordability is likely to be affected severely by the socio-economic impact of HIV/AIDS at the household level. This together with risk avoidance measure taken by end-user finance institutions makes such a prospect unlikely.

Being unable to pass on a cost increase to the subsidy would then leave delivery agents with two primary options, either to avoid the sector entirely or to pass on the cost to the process and/or the product of the supply system. This may result in measures taken to limit some of the social value-adding requirements of the housing delivery process, such as a shift from labour to capital intensive production processes (in particular for the top structure), or a decrease in the quality and quantity of output per unit of production (i.e. smaller houses, with lower quality of finishes and materials). The presence of process and product specifications for local procurement requirements and minimum norms and standards makes this prospect unlikely.

5.1.2 People's Housing Process supply system

The PHP supply system concerns itself with process and product maximisation. This means that it is geared to ensure that the performance of the different delivery agents' roles ensure the greatest level of locally defined contributions (e.g. from beneficiaries) and that high proportion of the subsidy is used on materials. The former translates into high social capital contributions whose value is not borne directly by the housing subsidy and therefore not easily converted into a monetary value, and is critical in ensuring the financial feasibility of the system. In addition to considering how HIV/AIDS demographic and economic impacts may affect social capital it is also critical to consider the contributions of other delivery agents and components.

The demographic and economic impact of HIV/AIDS on specific components and delivery agents whose contributions is critical in ensuring that the supply system operates effectively, include in particular:

- ***The fact that the operating costs of housing support institutions could substantially increase in the medium-term;***
- ***The institutional limitations of the delivery agents supporting the social capital contributions from beneficiary households;***
- ***The socio-economic vulnerability of social capital to the impact of HIV/AIDS; and***
- ***The vulnerability of the system to economic impact on other components, which affect the production costs of the system.***

Most of this system's economic vulnerability to HIV/AIDS arises from increases in labour costs for the professional support occupational category. This economic vulnerability will however only have a limited impact on the costs of production of housing delivered through this system as the operating costs of housing support organisations are covered by donor funding. Because benefits are generous in the sector, this is likely to affect the extent to which current levels of funding will meet the increases in operating costs of such institutions in a context of HIV/AIDS.

The system can accommodate a very limited degree of inefficiency from delivery agents in the provinces responsible for subsidy administration. This is because subsidies are often transferred in block to a special purpose vehicle set up by Housing Support NGO's or municipalities facilitating PHP processes. However, this only means that this function is decentralised and allocated to delivery agents who may themselves be affected by demographic impacts. In previous section, it was identified that the available skills pool to perform this role among Housing Support NGO's is limited. In terms of the skills pool available to perform other support roles, in particular process facilitation and community based project management, similar concerns should be raised, especially in a context where the existing ability of such delivery agents to retain professionals over time, is low. A demographic impact of the epidemic in this context will result in severe institutional memory loss. Further, in terms of implementation support, the case studies identified that this system is highly vulnerable to changes in the implementation of the regulatory framework. This in turn is affected by the extent to which officials in government (at the provincial and local sphere) understand and support the PHP approach and requirements. It is at this level, that the demographic impact of HIV/AIDS on institutional role-players would probably have the greatest impact on the PHP supply system.

The PHP supply system is designed to be labour-intensive and to maximise the contributions of beneficiaries in the form of labour, household level decision-making and community level mobilisation and support. This is broadly the scope of the social capital required for this system to operate. The socio-economic impact of HIV/AIDS will precipitate dramatic levels of household and community stress. In the short term, household affordability will be affected by loss of income and increased expenditure to cover the costs of morbidity and mortality. This may entail a decrease in the ability of beneficiaries to participate in construction activities. In addition, evidence has already emerged that where HIV/AIDS demographic and economic impacts affect the local level leadership and technical know-how in the beneficiary community, project progress becomes significantly hampered.

At the community level, the socio-economic impacts of the epidemic would be amplified as informal support networks become weakened, which would in turn limit the levels of social cohesion. Paradoxically, the process maximisation objectives of this system, where community development is an intrinsic part of housing development, may in fact provide a platform for affected beneficiaries and communities to develop coping mechanisms to manage some of the socio-economic impacts they experience. Indeed, by institutionalising locally-defined community development systems, the PHP supply system provides an avenue for developing and embedding measures to enable households to engage in HIV/AIDS prevention and impact management activities and to formulate mutual support mechanisms that build on existing networks and systems. For example, the People's Dialogue has taken steps to implement an HIV/AIDS and substance abuse support clinic in Philippi, Cape Town.

Finally, although the PHP system offers flexibility in the duration of the construction process and the quality and quantity of the housing stock produced; in practice, beneficiaries tend to concentrate production costs on those items that directly affect the size of a housing product. Typically, these include construction materials and labour, although the total labour costs may be affected by varying degrees of sweat equity contributions made by the beneficiary household or group of households. Concerns over profitability levels may be secondary in terms of the operational objectives and outcomes of self-help housing processes. Instead, greater focus is placed on achieving cost-maximisation to the benefit of the product, both in terms of quantity and quality. This means that the profit maximisation logic of the private-sector construction industry is not necessarily a feature of the self-help model. However, vulnerability to cost fluctuations, as a result of HIV/AIDS impacts means that some of the objectives of this housing delivery model may be compromised (i.e. higher materials costs may affect the size of housing unit).

5.1.3 Institutional supply system

The institutional supply system aims to fulfill product maximisation objectives. This means that it is geared to facilitate the development of durable, high quality housing stock that attracts beneficiaries who can afford to contribute to the cost of the housing product on an ongoing basis. To achieve these objectives the supply system has to leverage additional financial resources and ensure cost recovery from beneficiaries to maintain the value and the attractiveness of the housing stock on an ongoing basis.

Consideration of how this system is likely to be affected by the demographic and economic impacts of HIV/AIDS on its delivery agents and components include:

- **Extra-costs of labour in an HIV/AIDS environment will primarily be driven by the contributions made by built environment professionals but the direct costs of HIV will affect the operating costs of housing management institutions;**

- **The reliance of the system on the provision of end-user finance;**
- **The tensions between cost recovery imperatives and the socio-economic impact of HIV/AIDS on beneficiaries;**
- **Limited specific technical skills pool for products, and post-delivery functions; and**
- **High quality products, but financial limitations.**

Most of this system's economic vulnerability to HIV/AIDS arises from increases in labour costs for the professional support and on-site professionals and technicians occupational categories. While the latter will be responsible for driving the overall extra cost increase in this supply system, the former have only a limited impact on the costs of production of housing delivered through this system. Indeed, most the operating costs of Housing Management Institutions are covered either by donor funding or through cost recovery mechanisms or a combination of both. Because benefits are extensive in the sector, this is likely to affect the extent to which current levels of funding will meet the increase of the operating costs of such institutions in the context of HIV/AIDS.

The provision of end-user finance to housing institutions is a pre-condition for this system to operate. While end-user finance institutions are experiencing an increase in default rate which they suspect is partially linked to the economic impact of HIV/AIDS on households, they are concerned that this economic impact will increase in future. This consideration is motivating ongoing research on how financial institutions should address the economic impact of HIV on loan holders.

In the short term, it is likely that end-user finance institutions will experience an increase in derived economic impact. Similarly, they are likely to tighten their lending conditions in the longer term. This consideration is particularly relevant if one considers the historical aversion of the financial sector to finance low-income housing. Without affordable access to end-user finance the preconditions for achieving the objectives of the institutional system may become unattainable.

Beyond the end-user finance requirements, which housing institutions interface with on behalf of beneficiaries, the ongoing management and maintenance of the housing stock poses the need for tight cost recovery mechanisms. This requirement is presently experienced as a difficulty for most housing management institutions in the current context of widespread retrenchments. Typically, it is estimated that a recovery rate of at least 90% is necessary for institutions to maintain a minimum level of financial viability. Again, the socio-economic impacts of HIV/AIDS on the beneficiaries of the supply system mean that household affordability levels to sustain these contributions on an ongoing basis may threaten the financial viability of performing this housing management role in the long-term.

Given the novelty of the system, skill acquisition in the sector is primarily experiential. This not is only true of the professional workforce within housing management institutions, but also of the specialised professional skills which these institutions draw upon to conceptualise, prepare and implement institutional housing projects. A demographic impact on any of these role-players would immediately result in a skill vacuum, which may not be easily filled- and result in significant institutional memory loss over time.

Finally, this supply system provides some flexibility in terms of the cost of the process and outputs. However, the extent to which increases in the cost of procuring the role of other delivery agents (e.g. contractors, bridging finance, materials, etc.) may be effectively passed onto the total cost of the housing product is unclear. Indeed, whilst this supply system is seen to best suit the R1 500 - R3 500 subsidy eligibility band, the monthly income requirements to sustain the ongoing cost of housing products valued above R60 000 may no longer be affordable to the subsidised market.

5.2 Implications of provincial impacts from a national perspective

The following section presents our analysis of the implications of the provincial assessments of the demographic and economic impacts of the HIV/AIDS epidemic from a national perspective. It reflects, firstly on the manner in which we have approached the provincial assessments. Then we present findings arising from these assessments.

5.2.1 Approach to the provincial assessment

The provincial sphere has a significant stake and role to perform in the implementation of the housing policy. Similarly the spread and impacts of the epidemic are largely provincially specific. Therefore the relationships between the demographic and economic impacts of the epidemic and particular provincial application of the supply systems vary- at times significantly. We had access to reliable demographic data from the Census, from which to undertake projections relating to the demographic

impact of the epidemic for each province. However, we were acutely aware at the time of the conceptualisation of the research process that no such data source could be found for the application of the housing policy, in respect of the range of employment practices and costs which would be affected by HIV/AIDS. Our fieldwork confirmed the significant variations in the cost of each component in different provinces. Variations were also noted between municipal areas and even between projects within the same municipal areas. Therefore while we were able to model the demographic impact by province with sufficient robustness, undertaking such a fine-grain economic modelling analysis for each province, as that undertaken for the sector as a whole and for the supply systems would not have yielded sufficiently robust findings.

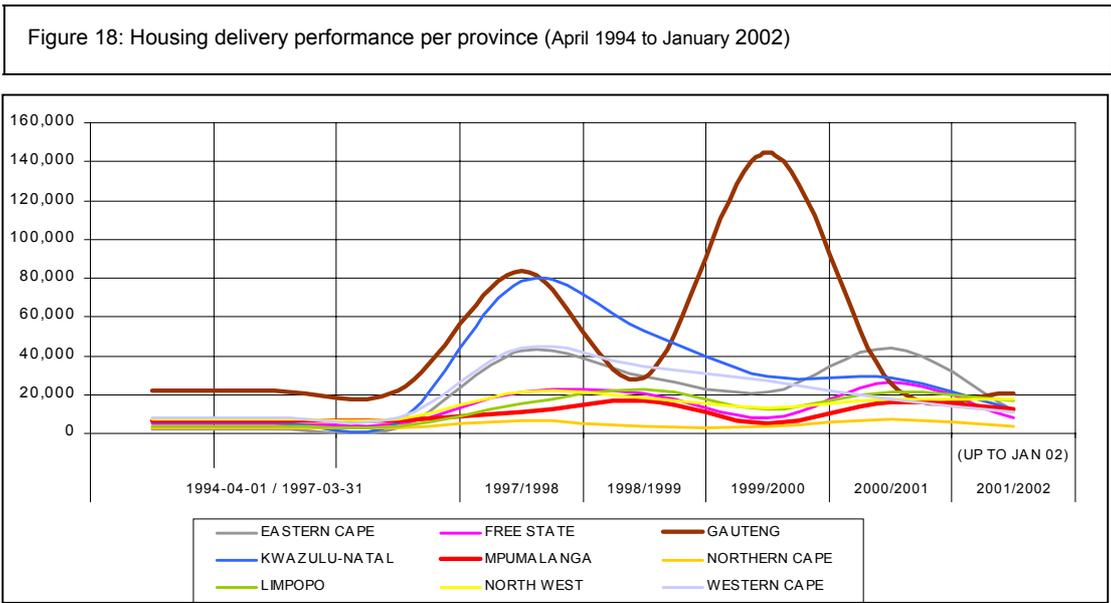
To align and reconcile these requirements- in a manner that would meaningfully reflect both HIV and housing specifics in each province- we therefore defined our approach as follows:

- First, we undertook a systematic review of past performance of each province in terms of its overall delivery track record and of the three supply systems;
- Then, we identified the strategic approach of each province in respect of its overall delivery targets, targets per supply-system, and specific approach to the application of the supply systems;
- Thirdly, we identified the intrinsic vulnerabilities of the implementation of the housing policy that are specific to each province;
- We interpreted the provincial projections based on the findings of the provincial fieldwork from which we drew a first order of implications;
- We extrapolated the projected extra-cost per supply system for each province based on the provincial share of the total workforce in each occupational category; and
- Finally, we reflected on the relationship between the extrapolated extra-costs per supply system in each province, the findings of the provincial projections, the intrinsic vulnerabilities affecting housing delivery in the province and the historical application of the supply systems in the provinces to draw implications for the implementation of the provincial strategic approach to housing delivery.

While this approach has some limitations, in that it does not adequately capture provincial variations in the cost structure of each component and supply system, it does provide a sound indication of the key areas of demographic and economic vulnerability per province.

5.2.2 Findings arising from the provincial assessments

The first overall finding of the provincial assessment relates to the past performance of each province in terms of its delivery track record. Figure 18 below, presents an overview of past performance since the implementation of the housing policy in each province. Its contents are critical in providing perspective as to what the future impacts of the epidemic will be in future.



Specific observations should be stressed in respect of the above figure:

- In the first few years of implementation, housing delivery did not take-off as expected. Two specific factors have been linked to the slow take-off. The systems for the implementation of the policy had not been established and significant gearing was needed. Secondly, while the private sector had been identified as the primary implementation for the policy, the structure of the subsidy (as opposed

to its value) meant that the level of financial risk it had to bear in participating in the implementation were deemed unrewarding. Not until these were altered to minimise risk did implementation really take-off.

- The graph also reveals that over the past six years significant fluctuations have been experienced in delivery levels, between the provinces and within single provinces. These stem from two key factors. The first is related to institutional transformation, after national and municipal elections and more importantly the successive waves of municipal re-demarcation. The second relates to changes in the real value of the subsidy over time. Since the introduction of the Housing Subsidy Scheme, its amounts have only been revised upwards twice (in 1999 and May 2002). Between these adjustments the real value of the subsidy has actually decreased. In turn, the interest of the construction sector has waned- in particular that of the larger developers and contractors who have the capacity to deliver at scale. In the course of our fieldwork, these delivery agents indicated that even the recent adjustment in the subsidy amount would not draw them back to a market which they see as relatively unprofitable. What is critical to note here is that these fluctuations had probably very little to do with HIV/AIDS. In turn, this emphasises the notion that the supply system as a whole is intrinsically vulnerable.

The table below provides an overview of delivery targets per province for the new Medium-Term Expenditure Framework (MTEF- 3 year planning horizon), and highlights the provincial share of the total national planned delivery. The contents of the table are reflected in Figure 19 opposite the table which represents the total provincial delivery up to 2002 and for the following three years according to the provincial targets. In the graph, two of the provinces with the highest past performance and future delivery targets as well as two of the provinces with the lowest past performance and targets.

Table 11: Delivery targets per province (MTEF period)

Province	Targets	Percentage
Eastern Cape	120,000	17%
Free State	45,000	6%
Gauteng	120,000	17%
KZN	140,584	20%
Limpopo	61,700	9%
Mpumalanga	51,594	7%
Northern Cape	17,094	2%
North West	79,894	11%
Western Cape	75,220	11%
Total National	711,086	100

Figure 19: Historical and planned delivery

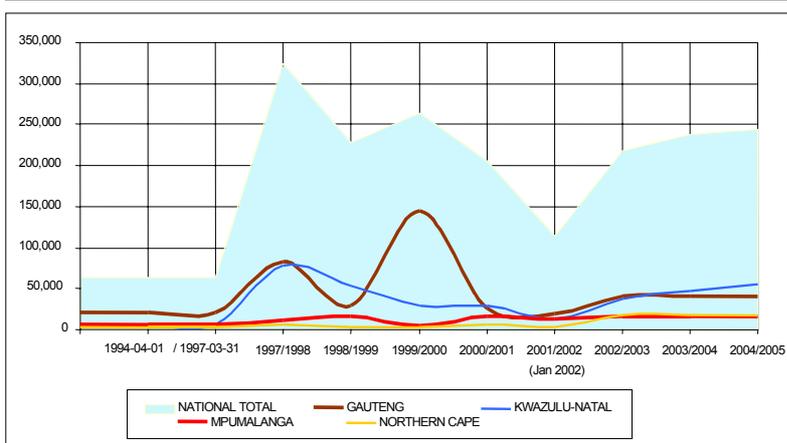
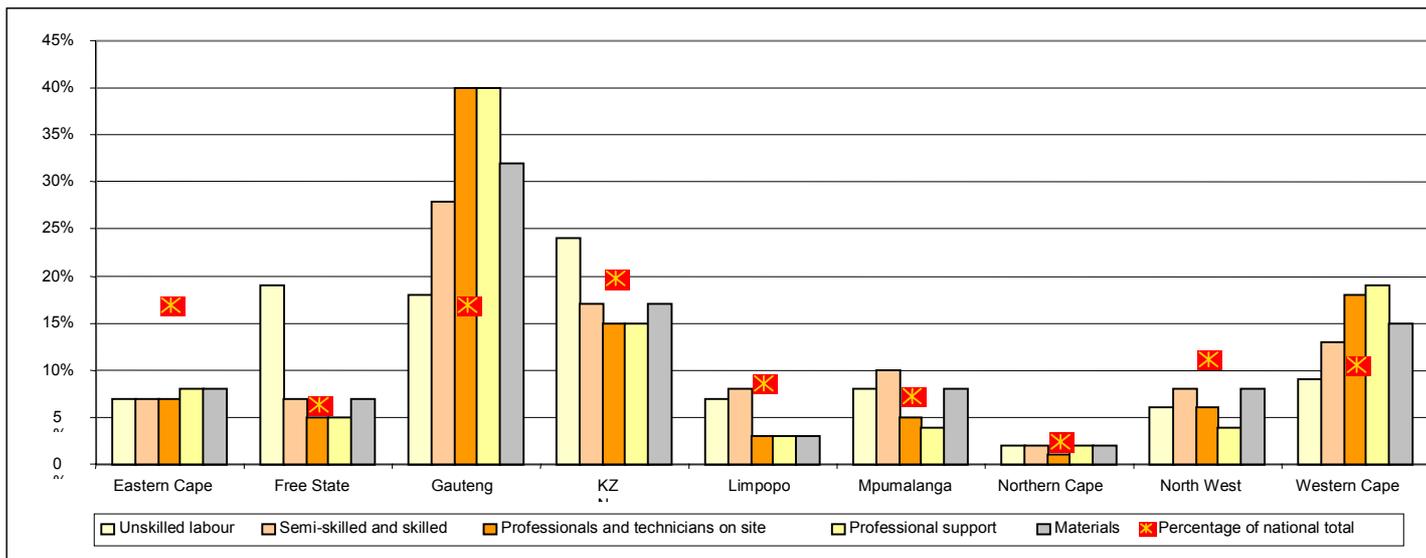


Figure 19 suggests that barring substantial change in the sector to rekindle the interest of large developers and contractors (who have the institutional and financial capacity to implement at scale) the figure of the aggregated provincial targets seems at odds with past trends in implementation. In fact, in the provincial assessments reveal that a number of provinces have set themselves delivery targets for the next three years that actually exceed their delivery over the last eight years. This means that irrespective of the impact of HIV/AIDS, some provinces' targets may be overly ambitious.

This is even more glaring if we compare, as we have, the provincial share of the delivery agents with the provincial share of the national aggregated targets, across provinces. Figure 20 below provides an overview of this comparison. It suggests that in some provinces the discrepancy between the provincial share of occupational categories and the province's share of the aggregated national targets is substantial- thereby further questioning the ability of those provinces to actually meet their targets (Eastern Cape, KwaZulu Natal and North West in particular)⁷. Interestingly, those provinces that have the greatest share of the total workforce (Gauteng and the Western Cape) have set themselves relatively conservative delivery targets.

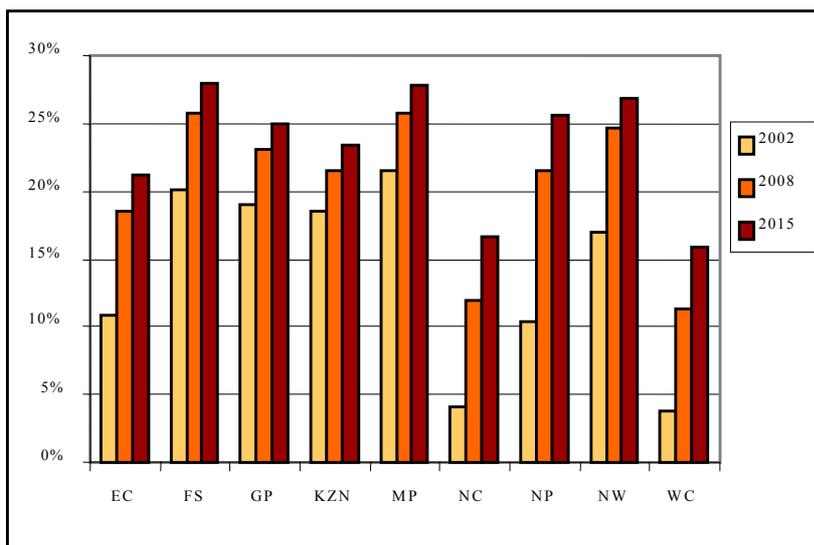
⁷ It considering the Figure it is also important to note that spatial and sector migration may have affected the respective provincial share of each occupational category.

Figure 20: Provincial spread of aggregated delivery and share of the occupational categories



Our provincial assessments reveal that the workforce in all provinces will be affected by HIV/AIDS, although there are large differences in severity of impacts between provinces. Provinces in which the low-income housing workforce is most severely affected in 2002 are Mpumalanga, Free State and KwaZulu Natal. Least affected provinces are the Northern Cape and Western Cape. However it is important to note that provincial differences in HIV prevalence are expected to become less pronounced over time. Thus while HIV/AIDS impacts on employees can be expected to be greatest in the worst affected provinces in the short- and medium-term, eventually all provinces may be badly affected. For example, HIV prevalence could more than double in the Limpopo Province (former Northern Province marked NP below) between 2002 and 2008, compared to a marginal increase over the same period among low cost housing employees in KwaZulu Natal leading to much closer levels, of HIV prevalence in these two provinces. This suggests that those provinces which currently have limited overall capacity to implement the targets which they have set themselves are also those which will experience significant HIV/AIDS impacts overtime.

Figure 21: Spread of HIV infection levels across provinces (2002-2015)



In the provincial assessments, we unpack the delivery targets in terms of the three supply systems. We also examined the strategic approach of each province in respect of the implementation of the supply systems. Key issues need to be highlighted in this respect:

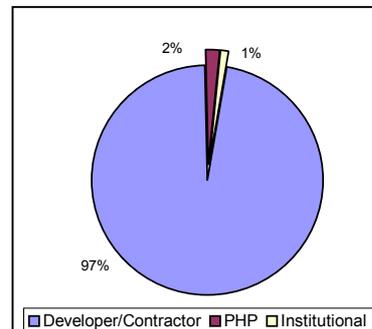
- Overall the developer/contractor supply system is likely to retain the greatest share of the MTEF budgetary allocation in all provinces. However, the institutional and the PHP supply systems, both make significant inroads⁸;
- Most provincial strategies (with the exception of Gauteng's) put forward municipalities as key delivery agents in all systems; and

⁸ This categorisation was subject to a limited extent of interpretation as some provincial programmes straddle the developer/contractor and the PHP supply systems.

- They are explicitly supportive of a greater engagement of small and emerging developers and contractors (in particular women contractors).

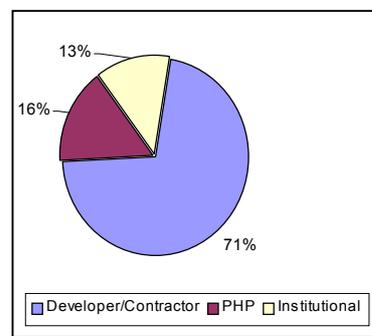
Considering these strategies enables us to comment on the provincial impact of the epidemic in terms of the future implementation of the supply systems. Firstly, it is necessary to note that the shift in the provincial strategies to support the PHP and institutional supply systems will require significant institutional gearing and capacity building. Similar conclusions can be made in respect of the emphasis on the municipal role. Secondly, it is clear that substantial inequalities exist between the provinces in terms of access to different occupational categories, in particular those occupational categories which play critical roles in the implementation of the two supply systems. This means that irrespective of the demographic and economic impacts of the epidemic, the current institutional capacity limitations of specific provinces will have a bearing on their ability to successfully implement the PHP and institutional supply systems- to the extent that they have planned.

Figure 22: National aggregation of provincial delivery per supply system (1994-2001)



Secondly, our provincial assessments (and in particular the projections undertaken for each province) reveal that in spite of the wide-spread beliefs that higher education and income levels are effective protections against the HIV, in some provinces, the projected levels of infection, AIDS cases and AIDS illnesses for these occupational categories are actually alarmingly high. The North West, Eastern Cape, Limpopo and Free State provinces stand out as being the provinces with both the highest demographic impacts on the on-site professionals and technicians and professionals support occupational categories, and comparatively limited shares of the aggregated provincial total workforce in these occupational categories.

Figure 23: National aggregation of provincial delivery per supply system (2002-2005)



In the course of our fieldwork we noted that increasingly, employers (especially in the NGO and public sectors) are recruiting young graduates in an attempt to overcome existing capacity limitations and the ongoing “brain-drain” which they are subject to. This means that the age profile of the occupational categories that are representing these delivery agents is increasingly reflecting those age groups where prevalence is also the highest. In turn, this suggests that institutional capacity limitations may remain vulnerable to demographic impacts in those provinces.

Having examined demographic impacts and their implications for the provincial application of the supply systems in line with provincial strategies, we also considered the provincial variations that would impact on the provincial extrapolation of HIV/AIDS extra costs. These relate to the specific application of the system in terms of provincial regulations and to the intrinsic vulnerabilities of each province. In the course of our fieldwork, we generally found that specific provincial regulations were identified as intrinsic vulnerabilities. The following provides an overview of the key issues identified in the course of the fieldwork, over and above those listed in Section 4 relating to the systems:

- Minimum erf and top structure sizes were generally seen as hindering delivery in those provinces where they exceed the national norm (30m²). The provinces which have minimum sizes above the national norm include Mpumalanga (50m²), Free State (40m²), Limpopo (45m²), Northern Cape (36m²). These affect the financial viability of the subsidy. While it is unclear the extent to which the extra percentage cost would be affected by the minimum standards, the level of specification makes delivery agents substantially more vulnerable to economic impacts.
- Service levels have an impact on the financial feasibility of housing projects and costs. They increase the share of the subsidy that is allocated to the services component and in turn decrease the share of other components often disproportionately. In provinces where service levels are highest (Gauteng and Western Cape in particular) the percentage extra costs could further affect the financial feasibility of housing projects in a context of HIV/AIDS.
- Geophysical and geographic conditions can have a drastic impact on the cost of construction. Provinces that are particularly affected by poor geophysical and geographic conditions include Gauteng (dolomite), the Western Cape (coastal province), KwaZulu Natal (hilly province) and the Northern Cape (distances).
- Historical settlement patterns in specific provinces can also potentially affect the technical and financial feasibility of construction, in particular where they have been associated with irregular settlements requiring *in-situ* development. *In-situ* housing processes not only require complex

planning and facilitation, but can also increase the cost of implementing services by up to 50%. KwaZulu Natal, the Eastern Cape, North West and Limpopo are particularly affected by this contextual vulnerability.

- Land ownership issues are mostly experienced in those provinces that incorporate former homelands and self-governing territories within their areas of jurisdiction. In such contexts, the transfer of tenure rights and township establishment processes are particularly complex. They involve all spheres of government and require customary authority support. This affects both the duration and cost of housing projects.
- A number of provinces (in particular, the Eastern Cape, KwaZulu Natal and Limpopo) have specifically prioritised rural housing delivery. However, projects occurring in rural settings are affected by the difficulty of transporting building materials and supplies to remote areas where there is very little or no infrastructure, making implementation more costly. This also hampers the connection of bulk infrastructure and causes delays in project implementation.
- Inadequate institutional capacity in government has already been discussed above. However, it is important to stress that specific provinces are particularly affected by this vulnerability, including Limpopo, the Eastern Cape, the Free State, North West and the Northern Cape.

There is potentially an infinite range of compounded economic impacts arising from the relationship between the provincially extrapolated extra percentage costs and the issues listed above. However, the key consideration to bear in mind is that provincial intrinsic vulnerabilities, like systemic intrinsic vulnerabilities, not only currently simulate the impacts of the epidemic but can also substantially aggravate these impacts. Furthermore, at least in the short-term, our assessments reveal that these intrinsic vulnerabilities can have much higher economic impacts on the implementation of the housing policy than those which are brought about by HIV/AIDS.

Finally, it is important to note that even those provinces which currently have lower demographic impacts, than others, are vulnerable to bearing extra-costs. These will arise from increases in direct costs across the sector (especially driven by medical benefits), that penetrate provincial boundaries. Extra-costs will also be driven by increases in the cost of producing materials (the component that the biggest cost driver in all supply systems). This stems mostly from the fact that the manufacture of materials is highly centralised in those provinces that are being severely affected by the epidemic.

5.3 Key issues arising

The key issues arising in respect of the national perspective are as follows:

- HIV/AIDS will have demographic and economic impact on the supply systems that will affect the cost of production of housing. We estimate that the average extra costs will range from 0,95% to 0,58% depending on the supply system over the next four years. These extra costs are tangible and should be managed accordingly.
- The extent to which the extra costs of production will affect the implementation of the housing policy needs to be considered in relation to the systems' intrinsic vulnerabilities and those of the provinces in which they are applied. Indeed, it is important to reiterate that the past slumps in delivery occurred in a context where HIV/AIDS was not a significant factor.
- In the short term, these vulnerabilities potentially represent a greater threat to the policy's implementation than the extra costs of HIV/AIDS. In the medium to long-term, these vulnerabilities will be significant in determining the extent to which the extra-cost of HIV/AIDS affects the financial feasibility of the housing policy.
- Critically, project-specific demographic impacts have the ability to disrupt project implementation, especially where critical paths roles are affected, and in those provinces in which sourcing key roles is currently difficult.
- The historical implementation track record and current institutional limitations of the provinces suggest that both the scale of implementation and the extent to which the provinces have refocused their implementation targets in favour of the PHP and the institutional supply systems may not be feasible without significant institutional gearing- irrespective of HIV/AIDS. In the context of HIV/AIDS, the need for institutional gearing and capacity building will become even more critical.
- Over time, the epidemic will also aggravate the current risk of institutional memory loss arising from the limited ability of delivery agents to retain skills and experience, especially in those provinces that currently have limited institutional capacity, thereby presenting a substantial obstacle to implementation.
- In turn, this means that longer-term impacts will be felt primarily in terms of a reduced ability of provincial housing departments to effectively spend provincial housing budgets. This represents a

sizeable risk as provincial budgetary allocations are aligned with the provinces' ability to spend their budget. In the long-term, this could lock budgetary allocation and expenditure in a decreasing vicious circle.

- Finally, it is anticipated that the operating budget of housing support role-players in government (provincial and municipal housing departments) will increase in the medium- and long-term. This could potentially affect the extent of their housing capital budgets.

6 RECOMMENDATIONS FOR HOUSING POLICY IMPLEMENTATION

The following section presents our recommendations to the Department of Housing on how to address the impact of the epidemic on the construction sector and in turn on the implementation of the housing policy. While the spread of the epidemic is a reality that cannot be avoided, the fundamental principle of the recommendations is that its outcomes will largely depend on the extent and the manner in which it is addressed and planned for.

Firstly, although the research findings reveal the existence of specific areas for policy recommendations, our research focus was firmly anchored within the ambit of policy implementation recommendations. Therefore, we have directed our attention to the latter type of recommendations.

Secondly, it is important to note that among the following are recommendations that extend beyond the immediate influence of the National Department. Indeed, as seen in the sections above, while the Department sets the overall framework for the implementation of the policy to a large extent the supply systems are operationalised by a range of delivery agents other than the Department, in the public, civil society and private sectors. Therefore, the recommendations have been developed in a fairly generic manner but provides clear indications of how these may apply to the range of delivery agents in practice.

Thirdly, while the bulk of our recommendations were drawn from an analysis of the inter-relationships between the demographic and economic impacts of the epidemic on the construction sector on the one hand and the implementation of the housing policy on the other hand, we also drew on “best practice” examples arising in the course of our field work. It is important to note that while some of these “best practices” were developed in response to the impacts of the epidemic on the delivery agents and the supply system, others were not. The latter were practices observed that we believe could contribute to managing and possibly mitigating the impacts of the epidemic on the delivery agents and/or supply systems. Where applicable we provide details of these “best practices”. Furthermore, we suggest that the principles of the “best-practice” examples- rather than the actual application thereof is what is important in the following- indeed, what is applied best practice for one supply system, component or delivery agent, may not necessarily correspond to the specific contextual characteristics of another.

Finally, in developing recommendations, we also sought to align our proposals with existing systems, mechanisms and processes as far as possible. This stems from our concern for making recommendations that are feasible, realistic and practical.

6.1 Prevention and education

Although the recommendations were not framed with the expressed purpose of eliciting medical and/or social welfare responses, there is ample reason for supporting HIV prevention efforts, as an important and cost-effective response to the epidemic for the sector. Indeed, while the extent to which current infection levels and short-term AIDS morbidity and mortality is unlikely to be mitigated by prevention efforts, there are opportunities for mitigating substantially the future growth of the demographic impact- even in those provinces that are currently the most severely affected. In addition, this could potentially reduce the future impact of the epidemic in those provinces that currently have fairly low prevalence, but are also facing the highest rate of growth of the epidemic. Prevention programmes should reach all occupational categories with due regard for social and work-related risk factors such as mobility and migration. This is made more important by the fact that workers also influence the infection rates in the communities in which they come to work.

In addition, we noted that overall myths and misunderstanding about HIV are still extremely rife, even in those provinces where the epidemic is well established- and across occupational categories and delivery agents. This means that HIV education and prevention remains an ongoing priority- for all delivery agents. Such intervention does not necessarily have to be formal- interventions such as peer counselling and mobilisation can take the form of lunch-break discussions or even a song (the Homeless People Federation has developed a powerful awareness message in the form of a song called “the snake with many heads”). A number of interviewees noted that they currently make available condoms to their labour force- both on and off site. The take up rate⁹ varied extensively, however a common denominator of factors influencing the take up rate was the extent to which the provision of condoms is accompanied by some sort of discussion on HIV related issues. In particular, we noted that where such discussion is led by peers- rather than superiors this was said to be better received and more effective.

⁹ I.e. the extent to which labour actually uses the resource made available.

It is well established that small and medium sized enterprises find it difficult to allocate scarce resources for workplace prevention programmes and less for community programmes. It is therefore important that the Department of Housing- possibly in partnership with other institutions that either offer such programmes and/or those that support the range of delivery agents active in the sector- consider ways to assist the development and continuity of these programmes more actively and encourage local authorities to target these workplaces for prevention support. This should include condom provision, and STD management.

6.2 Mainstreaming HIV/AIDS impacts in planning for housing policy implementation and knowledge sharing

The term “mainstreaming” was coined to promote the systematic consideration of crosscutting development dimension in planning and implementation. The emphasis here is on ensuring that HIV/AIDS demographic, social and economic impacts need to feature systematically from the beginning of policy, programme and project conceptualisation and design. For this it will become necessary for the delivery agents active in the implementation of the policy to familiarise themselves with the range of impacts of the epidemic.

6.2.1 Knowledge sharing

Obviously, it is almost impossible for delivery agents who operate in provinces or local contexts where the epidemic is not currently visible to pre-empt what these impacts may be. Therefore mutual horizontal sharing of information becomes important. This can take place across provinces, across delivery agents or across occupational categories represented among the delivery agents. Existing information and learning networks provide an important basis from which to begin sharing knowledge. Such networks include organised labour organisations, builders and contractors associations at settlement and provincial levels, provincial branches of the South African Local Government Association, inter-provincial development forums, community based organisations, municipal and provincial chambers of business, etc... Within organisations, our interviews found that the level of awareness of line function heads of key HR issues related to HIV impacts to be extremely poorly developed- especially in government institutions. In fact, where we secured the participation of the head of the organisation, together with implementation personnel and HR personnel in one sitting for our interviews, this was often the first time the topic had been approached in discussions in a given organisation- even when the HR person had noted significant changes in morbidity and mortality of all employees. This suggests that knowledge sharing, within organisations, also needs to occur.

Vertical learning networks are also critical. Indeed, our research found that even where an organisation is not particularly susceptible to demographic and economic impacts no delivery agent is entirely sheltered from experiencing a “derived/knock-on” impact from other delivery agents. Perhaps, the first step in this regard is to make it clear to delivery agents that they form part of a system of inter-dependent components and delivery agents, as most delivery agents seldom consider issues beyond those relating to their immediate client/customer base. Only once delivery agents understand what the impacts are they begin to think about what it may mean for their interests and how to address them.

6.2.2 How to mainstream HIV/AIDS

Mainstreaming need not only be a human resource issue (i.e. who is my labour force in a given project? How reliant am I on a particular skill profile? Is this kind of skill easy or more difficult to source?) but needs to extend to considering the extent to which a particular project, activity or system:

- (a) has an impact on spreading exposure to the epidemic;
- (b) is vulnerable to erratic or discontinuous labour procurement;
- (c) is negatively affected by delays;
- (d) is bound by either strict or flexible specifications in terms of the nature, timing or cost of the output; and
- (e) is currently affected by weaknesses and vulnerabilities.

Mainstreaming HIV/AIDS begins with considering both HR and the above issues systematically in all activities. What mainstreaming is **not** are short-term risk avoidance measures that may provide temporary relief from risk- real or perceived. For example, we often found in the course of our fieldwork, that delivery agents plan to further casualise labour to avoid bearing both direct and indirect economic costs. The long-term impact of this intervention could be devastating in an environment where trade-specific skills are

experiential- acquired on the job. In fact we believe that this type of response could contribute to aggravating significantly the current attrition of skills in the sector. Another example of misdirected risk avoidance response is to discriminate against labour categories on the basis of age, gender or race, to avoid groups that are overall more at risk. Firstly, HIV/AIDS does not discriminate. Secondly, some of the impacts of HIV affect different people differently. For instance, in the course of provincial interviews we noted that some employers target specifically older age groups (to avoid susceptibility among younger age cohorts). However, this has had the unforeseen outcome that older men tended to be more affected in terms of compassionate leave- to fulfil social roles.

Furthermore, our provincial assessments emphasise that there is currently extremely weak institutional capacity in particular provinces. We also identify that significant institutional gearing will need to occur to support the implementation of the PHP and institutional supply systems in the provinces- and more generally to strengthen the institutional framework through which delivery occurs. This provides an opportunity to “mainstream” HIV/AIDS in the institutional framework, by establishing systems and structures that are sufficiently robust to accommodate demographic impacts. We address below what these institutional solutions may be in the section dealing with contingency planning for micro-level impacts.

6.2.3 Forward planning

Mainstreaming HIV/AIDS is also about forward strategic planning. Overall our fieldwork found that strategic planning for the future is an activity which is particularly lacking among the range of delivery agents active in each system. Most delivery agents are actually reactive to change, rather than pro-active in terms of their planning for the future. One of the reasons for this type of response is the lack of certainty of the housing environment. However, we would strongly argue that not engaging in proactive planning in respect of HIV/AIDS leaves delivery agents (and the systems which they operate in) open to vulnerabilities, which are in fact manageable. Indeed, we firmly believe that the outcomes of the HIV/AIDS epidemic will reflect the measures that are taken to manage its impacts.

In the private and NGO sectors strategic planning is a measure which affects the efficiency, profitability and/or sustainability of organisations. In fact our fieldwork revealed that those delivery agents that are currently most successful are those that have integrated planning for the future as part of their day-to-day activities. Strategic planning does not necessarily need to be a very elaborate process with complex outputs. It is simply a systematic consideration of factors that affect the current and future development of an enterprise according to which decisions need to be made to align the enterprise’s operations and institutional structure to either minimise negative impacts or promote positive impacts.

In the public sector, policy and legislation are extremely clear about the statutory requirements for planning of the respective spheres of government. In the municipal sphere, the Municipal Systems Act makes it mandatory for municipalities to plan for housing development and HIV/AIDS as part of the Integrated Development Planning (IDP) process. We suggest that this is an important opportunity for municipalities, as to a large extent the impacts of HIV/AIDS will reflect local socio-economic dynamics. As housing (and other sectors’) investment is guided by the strategic contents of the IDP, it will become increasingly important for municipalities to consider both HIV/AIDS and housing delivery (as well as other sector delivery) in an integrated manner as part of their IDP process, to formulate and implement housing development strategies that are geared to manage HIV/AIDS impacts.

The provincial sphere is responsible for developing and maintaining provincial housing development plans. Our fieldwork and analysis reveal that to a large extent provinces have not responded to the impacts of the pandemic on housing delivery- in their plans. At best, mention is made of the impacts of HIV/AIDS on beneficiaries (i.e. the demand side). Although preliminary strategic responses are made to such impacts, there is very little indication that such responses have been formulated in a way that considers their long-term sustainability and feasibility. Furthermore, the provincial plans have not substantially considered the impacts of the pandemic on the supply side. We suggest that it will become increasingly critical for provinces to do so. In addition, we strongly argue that as part of their planning process, provinces need to consider and respond to the intrinsic vulnerabilities of housing delivery in their respective provincial contexts.

The national sphere is also responsible for planning at the national scale. Again, we emphasise that considering the impacts of the pandemic on the supply (as well as the demand) side is critical to ensure that the objectives of the housing policy are successfully met. We would further argue that as part of this process, the intrinsic vulnerabilities of the systems need to be considered and addressed.

We suggest that to enable delivery agents to mainstream HIV/AIDS in their activities and forward planning practical guidelines targeted at different delivery agents may need to be developed. Such guidelines would need to be aligned to the specific role and institutional profile of different delivery agents. We suggest that these guidelines should provide both basic information on what the impacts of HIV/AIDS may be on the respective delivery agents and provide guidance on how to plan with the impacts of the pandemic.

6.3 Tracking impacts

A major difficulty in the sector is related to the relatively poor levels of monitoring- across the systems and delivery agents. Monitoring is critical as it enables firstly to identify trends and evaluate the extent of impacts over time, thereby enabling delivery agents to better consider responses to impacts. It can also serve as an early warning system, for troubleshooting purposes. Government departments are responsible for monitoring implementation- as part of their performance management systems. Typically, this activity is not often well developed- in particular in the municipal and provincial spheres- but forms part of the range of planning competencies which the spheres have. Monitoring activities in small businesses, in the sector, is almost non-existent, in spite of the fact that it represents a sound business practice. In addition, where the implementation hierarchy (for instance where there are layers of contractors, sub-contractors and sub-sub-contractors) is highly layered but not institutionalised we found that the extent of vertical performance monitoring and control of “on-the-ground” activities was extremely poor. This not only affects quality control, but also the extent to which knowledge about the demographic and other impacts is shared vertically.

We suggest that specific areas of impact need to be monitored. A note of caution needs to be considered in terms of taking these indicators as exclusive indicators of HIV impacts. Indeed, while they are areas of impact which we have noted in the course of our research there could be a range of other reasons for any of these phenomenon. What we suggest is that a finer grain understanding of the causal factors leading to specific trends is also needed.

These indicators could include:

- Absenteeism and trends in sick and compassionate leave in the workforce. All delivery agents need to become aware of the demographic impact of the pandemic on their workforce. Attention would need to be given to the factors that lead to these trends- aside from HIV/AIDS. Indeed, in the course of our fieldwork we found that factors such as poor human resources management practices or unsatisfactory working environments are influential in determining trends in sick and compassionate leave.
- Beneficiary absenteeism at the time of handing over of the property. In the course of our fieldwork, this indicator was identified as growing area of derived impact on supply side delivery agents, which in the developer/contractor supply system in particular, can incur significant costs. However, it is important to note that factors other than HIV/AIDS (such as migration) could be important in the occurrence of beneficiary absenteeism. We suggest that municipalities and the provincial housing departments are particularly well placed to perform this monitoring role.
- The accuracy of waiting lists. This is also an area of derived impact which our fieldwork emphasised. In a number of provinces, waiting lists from which beneficiaries are identified are becoming less and less reliable, thereby augmenting the requirements for the role of beneficiary administration. Again, caution would need to be exercised in considering this indicator as exclusively related to HIV/AIDS, as migration and fluidity in household formation could also affect the accuracy of waiting lists. We suggest that municipalities and the provincial housing departments are particularly well placed to perform this monitoring role.
- Trends in default of end-user finance and in the ability of the beneficiaries of the institutional housing system to make monthly financial contributions. Both types of trends reflect worsening household economic conditions, which we suggest could be arising from the impacts of HIV/AIDS on beneficiaries. Care, should however be taken to consider this indicator as also being a reflection of non-HIV/AIDS factors such as unemployment or poor cost-recovery management. We suggest that financial institutions, housing management institutions and provincial housing departments are well placed to perform this role.
- Trends in bridging finance defaulting and project breakdown. This indicator would provide a measure to monitoring economic impacts arising at the project-level. It would not necessarily indicate impacts on the organisation or individuals holding the bridging loan, but on the range of delivery agents who participate in particular project and who have a bearing on its progress and on the financial flows (i.e. subsidy management). Again, it would be necessary to understand the cause of these trends, which may reflect implementation obstacles that are not specifically related to HIV/AIDS. Financial institutions and provincial housing departments are best placed to perform this role.

6.4 Contingency planning for micro-level impacts

Although overall the sector-level economic impacts of the epidemic may be discrete in the short term, the findings of our case study and provincial interviews reveal that project/micro-level impacts on projects can be devastating. Where key roles are affected in the implementation of projects, these projects can be suddenly plunged into immobility. Critically, these roles, may not necessarily be highly skilled roles (although as a rule the higher the skills level the more difficult replacing labour becomes). In the course of our research we identified the following roles as being critical to the implementation of the supply systems overall:

- Implementation management roles;
- Financial management roles;
- Decision-making roles; and
- Liaison roles.

These “critical path” roles are found across all the delivery agents. If those roles are affected then implementation is affected. Currently, irrespective of the demographic impacts of HIV/AIDS we have noted that these roles are often poorly resourced. This suggests that much greater attention will have to be given to addressing this existing weakness in the context of HIV.

There are different ways in which to address this vulnerability. Solutions could include the following approaches:

- De-concentrated decision-making. This is about “flattening” hierarchies of decision-making by localising responsibilities closer to the “ground”. It means that this removes bureaucratic obstacles that are associated with highly hierarchical systems. This approach should not be equated to “de-centralisation”, especially in a context of limited institutional capacity especially at municipal level). Instead, it is about making centralised capacity more operational locally. This is in line with the approach taken by the Gauteng Department of Housing which has undergone significant institutional re-structuring and has not only regionalised decision-making across the province, but has also resourced it with additional resources in terms of the professional support and on-site professionals and technicians occupational categories. Although this institutional restructuring operation was not developed in response to the impacts of the epidemic, in a context of HIV/AIDS we believe that its principle represents a “best practice”.
- Aligning responsibilities with capacity (especially where such capacity is currently limited). This is critical in a context of HIV/AIDS. In several provinces, this is likely to require that a much more concerted effort needs to be made to build the capacity of existing human resource. As an additional strategy, it will probably become important to co-opt capacities that may not have historically played a significant part in housing delivery. In particular, in the course of the provincial interviews, we noted that some municipalities have harnessed the capacity of both portfolio and ward councillors in the implementation of projects. This represents a best practice, as it is a concerted effort to mobilise capacities beyond the ambit of the traditional implementation delivery agents. Similar interventions have been noted where co-operation has been established with customary leadership, community-based organisation leadership.
- Managing institutional knowledge. High levels of turnover currently affect the consistency of personnel in government, NGO and even the private sector. This makes the implementation of supply systems (especially the PHP supply system, which takes longer to implement than the others) particularly vulnerable to a lack of continuity in terms of decision-making and project implementation support. The medium and longer-term impacts of the epidemic are likely to aggravate this “institutional memory loss”. In turn, this means that the management of institutional knowledge becomes critical. The practical applications of this principle range from documenting and sharing knowledge within organisations on an ongoing basis to ensuring those decisions are documented and adequately recorded. We identified a number of NGO’s who are currently developing knowledge management systems in response to their high levels of staff turnover- we suggest that this is a “best practice”.
- Shadowing of key decision-making personnel. This can be an effective way of mitigating the impact of intermittent absenteeism. The principle of this approach is to ensure that the responsibility for decision-making is not held by a single person but is shared by up to three individuals. In the course of our provincial interviews we noted that some developers and NGO’s currently insist on more than one signatory for approving financial claims. The principle for this approach was also noted in respect of our observation that often junior officials who work closely with their superiors become repositories of knowledge about project implementation progress and decision-made.

- Succession planning and management. This will become unavoidable among all delivery agents and is about ensuring that processes are available within organisations and/or projects to effectively replace key role players (especially where those are related to critical path roles) in a way that minimises disruption. In the government sector, a key hurdle in this respect is that posts can only be advertised once they effectively become vacant, this makes it particularly difficult to implement managed succession processes.
- Multi-skilling. In a context of HIV/AIDS, this is a generic response to managing demographic impacts. In effect it is about minimising the loss- even intermittent- of human resources within an organisation. This is particularly important in terms of trade-based skills in the construction sector. We identified that currently the materials supply sector has established multi-skilling practices. This is implemented, among these kinds of delivery agent, by rotating staff across the shop floor (thereby leading to the acquisition of product knowledge). We noted also that some contractors target specific individuals, especially semi-skilled labour- for multi-skilling across trades. This means that these individuals may not over-time become highly skilled in a specific trade but that they can perform a range of trades at level of skill which enables them to assist and more importantly “substitute” for higher skills level as the need arises.

6.5 Efficiency interventions to address intrinsic vulnerabilities

As has been shown in this report, intrinsic vulnerabilities in the application of the systems and in the provinces will have a much greater bearing on the implementation of the housing policy in the short-term than the economic impacts of the epidemic. However, in the medium and longer term, these will be exacerbated by the demographic impacts of HIV/AIDS. We believe that part of an effective implementation response to the epidemic involves addressing these intrinsic vulnerabilities. Among these we have identified the following as requiring urgent attention:

- Inefficiencies in the processing of claims and drawdown payments (in the course of our interviews we noted that these inefficiencies are linked to overly bureaucratic systems, poorly managed and insufficiently transparent discretion levels, held by officials in approving claims, and the lack of familiarity of emerging contractors and developers with financial reporting mechanisms);
- Inaccurate waiting lists from which to identify beneficiaries;
- Lack of transparency in the approval of project proposals and irregular calls for proposals;
- Lack of consistency across the provinces in terms of the application of the subsidy regulations, and the development of minimum norms and standards.

Longer-term interventions could include addressing:

- Excessive delays in the Deeds Office and the Surveyor General’s Office (linked to an increase in the role which both offices have had to perform since the implementation of the housing policy);
- Duplication of approval channels in the planning system.

Programming efficiency interventions in respect of the intrinsic vulnerabilities should also consider how to assist delivery agents perform their role in a context of HIV/AIDS. Part of this type of intervention entails dealing with the punitive applications of regulations that affect the financial and other risks taken by private and civil society delivery agents. Positive interventions were noted in the course of the provincial interviews. Gauteng’s new procurement approach stands as a particularly strong attempt to manage financial risk in the developer/contractor supply system. Its approach is to be implemented as part of a thorough institutional transformation process. The North West province has also established more transparent tendering procedures to address irregularities in the housing delivery procurement regime. More discrete interventions were also noted. For example, the Free State department of housing has identified materials suppliers and negotiated preferential trading conditions for developers and contractors in the province, to mitigate the impact of delay in the payment of draw downs by the Department on the delivery agents’ ability to pay their creditors. By seeking to address excessive risk levels, these practices can help to manage some of the impacts of the epidemic.

Furthermore, while the recent subsidy increase was aimed at reflecting the escalation of building costs since the last subsidy increase, the decision to review subsidy amounts on an annual basis will become even more critical in the context of HIV/AIDS. We suggest that future revisions in the subsidy amounts should strive to reflect the increases in costs which the epidemic will have on the supply systems over time. However, we would discourage using the provincial extrapolation of extra costs to motivate for additional provincial allocations per province only to align with the impacts of the epidemic in each province. Although there are provincial differences in extra-costs we would strongly argue that the true economic impacts of the epidemic

will be far more nuanced than reflected in the provincial extrapolation. We would also argue that financial solutions to as a multi-faceted phenomenon as HIV/AIDS cannot be effective in isolation. The slow take-off of housing delivery in the first three years of the implementation of the housing policy is ample proof that funding alone does not necessarily lead to implementation. A much broader challenge is to ensure that the systems are supportive of implementation in the context of HIV/AIDS.

6.6 Capacity building

Capacity building will become an important intervention to counter-act the demographic impacts of the epidemic. Aside from the type of capacity building interventions explored above, we suggest that a concerted programme for long-term capacity building- across delivery agents needs to be developed. This should target in particular:

- Countering the impacts of institutional memory loss among the professional support and on-site professionals and technicians occupational categories;
- Addressing the overall attrition in skills (especially in the skilled and highly-skilled occupational category);
- Promoting the acquisition of business skills among emerging contractors and developers.

In the short- and medium-term more targeted types of interventions should be considered. For this purpose it would be judicious to align interventions with those of established initiatives such as the Construction Industry Development Board, the CETA training strategy, the NHBRC training initiatives, those provided at project level by dedicated organisations.

We suggest that given the lack of consistency of work opportunities in the sector, engaging on a mass training initiative would run the risk being misdirected and wasteful. In addition, the demographic impact of the epidemic will build up over-time and its effect on the availability of different kinds of skills will be gradual. We believe that such attention to training should be guided by a consideration of needs and skill gaps as and when projects occur. To a large extent, the current application of the housing policy does provide for project specific training. However, the manner in which this is currently implemented, constitutes an intrinsic vulnerability especially for the developer/contractor supply system, as the cost of training is borne by the subsidy. Incidentally, this is unlike the application of the Department of Public Works' project funding which makes provision for a training grant separately from capital costs. The introduction of the skills levy has done little to accommodate the cost burden of project-specific training activities, to date. In particular small contractors- whose labour is mostly casual- are often not in a position to contribute to the levy. The funding cycle and application for funds of the skills levy does not currently align with the housing project cycle. This is an area of intervention which would require urgent attention.

6.7 Recommendations per supply system

The following section presents our recommendations in terms of the three supply systems examined in this report. We emphasise the systems' characteristics that should be considered as "best practice" in that they mitigate some of the impacts of the epidemic- either demographic or economic (and which could provide guidance to changes in the implementation of the other supply systems), and highlight key areas for intervention.

6.7.1 Developer/contractor

The appeal of this supply system is that it provides a vehicle for speed and scale of delivery which has historically been geared with the involvement of established developers and contractors. The benefits of scale are important to maximise financial efficiencies. In turn, these enable savings on a range of items and activities, that could mitigate the extra-costs of the epidemic on the supply system. The principle of scale has historically been implemented at the project level (i.e. by developing a large number of units to achieve economies of scale). It is however worth considering that the benefits of scale can be achieved by other means. Indeed, scale can occur by structuring activities and project as part of co-ordinated umbrella programmes. For example, an organisation can take the lead to co-ordinate the purchase of materials for housing projects in a particular spatial area, thereby negotiating preferential prices and trading conditions. Programmatic implementation does not necessarily require the involvement of large organisations, but needs effective co-ordination and management. This co-ordination role may be performed by a range of organisations, from private sector and parastatal organisations, municipalities (provided they have the

capacity), NGO's and even community-based organisations. Importantly, in its application, the co-ordination role does not have to negate the principle of de-concentrated decision-making.

One of the key intrinsic vulnerabilities of this supply system remains that its application involves significant levels of risk. We suggest that managing risk levels for all involved represents an important intervention. New procurement regimes being implemented are particularly important in this respect. Further, we also believe that the separation of the implementation of the different components, as envisaged in terms of the new procurement regime currently being implemented in Gauteng, could potentially isolate some of the costs passed onto the subsidy, by not disaggregating. Although these costs would still be a feature of the supply system, the overall responsibility for bearing the costs and still deliver a product with high levels of specifications would not have to accrue to a single delivery agent (i.e. the developer in a turnkey project) but would be shared more effectively across the delivery agents responsible for the implementation of separate components.

Finally, we suggest that the financial risks associated with beneficiary absenteeism should be addressed. This means that payment of the last tranche of the subsidy should not be withheld unreasonably because the beneficiary cannot be found to take occupation of the property. Where the registration of the site occurs prior to the development of the top structure- which is generally the case- this financial risk is amplified. There are potentially complex situations and questions that need resolving when the beneficiary passes away prior to occupation but after registration of the property in his or her name. These are linked to the tenure rights of the dependents and/or spouse of the deceased beneficiary. While we understand that such rights need to be protected, the requirements and outcomes of either enabling transfer to the dependents of the deceased beneficiary or alternatively re-registering the tenure rights in the name of an alternative beneficiary should be carefully considered. This issue falls beyond the ambit of the research (as it relates to the demand-side of housing delivery); nevertheless, we suggest- in respect of the supply side- that the financial risks associated with increasing beneficiary absenteeism should not be borne by the developer. In the course of our fieldwork, we noted, in some instances, that developers and municipalities put in place risk management mechanisms that enable the municipality to take over the responsibility of beneficiary absenteeism and the financial risks associated therewith.

6.7.2 People's Housing Process

The PHP supply system's strength in the face of HIV/AIDS is its flexibility, in terms of product and process, and the fact that it is designed to enable the local context to shape the process of housing delivery. This flexibility means that it can absorb some of the impacts of the epidemic. In fact, because the PHP system is about generating community development that spans beyond the mere construction of houses it also represents a significant opportunity to co-opt existing systems to introduce coping and management mechanisms to mitigate some of the demographic and socio-economic impacts of HIV/AIDS on beneficiaries. Secondly, by promoting a culture of mutual learning (both vertical and horizontal) the practice of the PHP, as it has been developed under the aegis of specific community based organisations (the Homeless People Federation in particular), provides an opportunity to recreate the skills and capacities that will be lost from the demographic impact of the epidemic. Thirdly, the PHP's emphasis on de-concentrated decision-making makes it less vulnerable to impacts compared to systems where decision-making is highly hierarchical and centralised.

On the other hand, interventions will be needed to support the implementation of the PHP. The first will be to address the significant vulnerability of the system to institutional memory loss. Some of the approaches discussed above in terms of contingency planning for micro-level impacts on critical paths roles will also become a necessity. Thirdly, the extent to which current funding levels for the operating costs of housing support NGO's will adequately meet increases in costs is unclear. Therefore, it will become critical to consider how to manage these costs. Finally, because the supply system is about supporting people driven initiatives, its application will have to be closely monitored to assess the extent to which it will be affected by the impact of the epidemic on beneficiaries. Our fieldwork suggests that HIV/AIDS impacts on beneficiary communities pose the following challenge to the supply system: "how to continue supporting a delivery effort in contexts that are increasingly under socio-economic stress".

6.7.3 Institutional supply system

One of the strengths of this supply system is that it circumvents most of the particularly complex and poorly resourced applications of the planning system. By localising tenure registration and management it does away with the range of hurdles that otherwise affect housing delivery in greenfield situations. Further, by establishing practices of shared responsibility for maintaining and managing housing stock between

beneficiaries and housing management institutions, the system promotes capacity building among beneficiaries to increasingly perform housing management roles over time.

A key hurdle to the implementation of this system, today, is the limited extent to which it can draw on existing institutional capacities. HIV/AIDS will aggravate this situation. Therefore, it will be important to address the requirements for institutional gearing (including financial requirements). The start up facilitation grant which the PHP system draws on, to gear up institutional support, may be an example to consider.

Finally, we have noted that the impact of HIV/AIDS on beneficiaries poses a sizeable challenge to the system, as it is vulnerable to disruptions in cost-recovery. We suggest that innovative approaches to cost recovery may need to be developed to address this challenge. In the course of our fieldwork we noted for example that some institutions are envisaging developing cross-subsidisation mechanisms by developing housing products for the non-subsidy market from which to cover the financial risks associated with a demographic impact of the pandemic on the subsidised market. The Homeloan Guarantee Company as also recently launched a product that is geared to cover the financial risks associated with a demographic impact of the pandemic on borrowers. Although this product is yet to be implemented, its approach, which seeks to manage the treatment of the medical costs of HIV/AIDS and hence enable lenders to honour their financial obligations, provides an opportunity to consider the feasibility of the system in a context of HIV/AIDS.

6.8 Areas for further research

The scope of this research was comprehensive, as it sought to identify and specify areas of impact on the broad supply side of the housing policy. This has been undertaken. In the process, we have identified specific areas that would require more in depth investigation. These include:

- A detailed assessment of the impacts which the pandemic will have on sub-sectors in the implementation of the housing policy. These sub-sectors would include the end-used finance sector, the bridging finance sector, the land planning system, the tenure registration system and the materials sector.
- An in depth analysis of the specific impacts which the pandemic will have on those delivery agents who will increasingly be called upon to perform a role in the implementation of the policy. This comprises in particular municipal delivery agents (including officials and councillors), small and emerging contractors and developers, as well as housing support NGO's and housing management institutions.
- A strategic analysis of how HIV/AIDS will impact on the demand side of the policy housing, where the demand side is defined as communities affected by the pandemic, rather than only individuals or households infected and/or affected by it. (which has been the focus of research to date).
- An assessment of the relationship between the impacts of the pandemic on the demand side (as defined above) and on the supply side as investigated in this research process. This would seek in particular to identify the extent to which the supply side should be altered to align with the changing needs of the demand side.
- Longitudinal studies tracking project-levels impacts over time (within specific settlements), as well as organisation-specific studies.

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