

**Fire Sensors for Safer Urban
Communities: Cape Town Policy
Review**

**American Red Cross
South African Red Cross Society**

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Acronyms and abbreviations

CTFRS, or 'the Fire Service'	City of Cape Town Fire and Rescue Service
CoCt or 'the City'	The City of Cape Town
CORC	Community Organisation Resource Centre
DRM	Disaster risk management
DRR	Disaster risk reduction
HDAhad	Housing Development Agency (national)
IDP	Integrated Development Plan
NDHS	National Department of Human Settlements
SARCS	South African Red Cross Society
Stats SA	Statistics South Africa

Fire Sensors for Safer Urban Communities: Cape Town Policy Review

1. Introduction

This report is part of the Fire Sensors for Safer Urban Communities project undertaken by the American Red Cross, in collaboration with the Kenya Red Cross, South African Red Cross Society (SARCS) and other partners. The project worked with 2,000 vulnerable households – 1,000 each in Mukuru, Nairobi, Kenya and Khayelitsha, Cape Town, South Africa – to pilot the use of emerging technology to reduce fire risks. The main objectives of the innovation project were to work with local communities to prototype, install and test several models of fire sensors in two locations and to develop a business plan that would drive expansion to other vulnerable urban communities.

The reason for piloting new types of fire sensor and associating them with a local community response in informal settlements is that such urban communities often have high levels of poverty and inequality, and in many cities they are not officially recognized as settlements that require governance, upgrading and services. Rapid and haphazard community development in informal settlements places many homes dangerously close together, and when fires start, they spread easily and quickly. Given the density of many of these settlements, evacuations are chaotic and dangerous. Pathways between homes are narrow and often blocked, and responders are often unable to access homes in time. Despite the frequency and large-scale devastation of fire outbreaks in these urban communities, fires are often undocumented and actions to reduce fire risks are significantly underfunded. Nevertheless, it is clear from news reports, community and government informants, that fires in informal settlements are a major recurring hazard in many cities, and that they result in loss of life, injury to people, and loss or damage to housing and possessions. They have a negative impact on livelihoods, including local small businesses and residents' capacity to attend jobs elsewhere. Such fires impact the very poorest city residents, who are rarely insured, meaning that recovery means staring all over again.

Although seasonal flooding is the highest disaster risk for Cape Town, and especially for the informal settlements located on the area's natural drainage wetlands, the city is also particularly prone to fires. Wildfires from the national parks and bushland within and around the city often encroach on urban areas in the warmer summer months, fanned by the city's weather phenomenon of almost constant winds from the sea. Fires that start within urban areas can spread rapidly in the summer season, due to the same sea winds. However, urban fires in informal settlements are more commonly triggered by electrical short-circuits (due to illegal electrical connections), and accidents from cooking (especially from paraffin stoves and some open fires), or the use of candles for lighting, children playing with matches, and cigarette smoking, all within very confined spaces close to flammable materials. As well as the city-wide risk of fire, informal dwellings present additional fire danger to residents, principally because of the close proximity of housing, as well as the types of construction material used, meaning that fires spread very rapidly. This rapid spread, along with difficulty of physical access for

fire trucks, makes effective response to shack fires a major challenge for both residents and fire and emergency services.

The Cape Town Fire Sensor Pilot Project is being undertaken in four sections of Kayelitsha (WB, TB, UT Litha Park and TT) that are informal settlements (Khayelitsha is partially informal). It combines fire awareness training and community response, with the installation and trial of a specially designed early detection device developed and made by local company Lumkani. The fire sensors used detect sudden increases in temperature and are designed for small dwellings. This fire sensor trial is still being implemented and will be reported upon separately. The present report provides the city-wide policy context for the question of managing fire risk in informal settlements and other informal dwellings. It looks at the governance challenges of ensuring the city's residents are adequately housed in the face of increased urban migration of the very poorest people, as well as the legislative, policy and institutional basis for the systems of disaster risk management and fire response in Cape Town. The focus is on implementation of these policies as they affect residents of informal settlements, with particular focus on the targeted project areas of Khayelitsha and similar informal settlements in Cape Town, and also how the policies meet the needs of others living in more dispersed informal backyard housing. The purpose in doing so is to place the Fire Sensor Project in the context of local city risk governance efforts, which include both direct fire risk management across the city as well as an ongoing process of planning new housing and upgrading of existing informal settlements and other informal residential structures. The report documents these policies as part of a comprehensive study, as well as to provide recommendations for potential areas of programming and advocacy.

In preparing the report, the consultant drew on:

- a) Relevant laws and policies (national, provincial and city levels) that establish policy objectives, resourcing, rights and responsibilities on managing housing and informal settlements, disaster risk management and fire prevention and management in Cape Town, especially as these relate to 'shack' fires in informal settlements such as Khayelitsha, as well as fires affecting informal backyard dwellings in formal settlements (a widespread phenomenon in Cape Town, tenants of which are known as 'backyarders'); and
- b) Group discussions and both formal and informal interviews with key informants during a two-week mission to Cape Town in November 2015. This included conversations with community leaders and volunteers in the SARCS Fire Sensor Project security training workshop and the simulation exercise at Khayelitsha Community Center, as well as more formal discussions with community members, government officials and SARCS staff. The purpose of these discussions was to gain an understanding of how the different local actors saw the issue of fire risk, including the effectiveness of prevention and response, their understanding of allocation of responsibility, and any ideas they had about how the existing system could work better for prevention of fire disasters in informal structures.

There are two main types of informal dwellings in Cape Town that are very susceptible to urban fire risk, and which are occupied by large numbers of the city's poorest people.

Each has slightly different fire risks and different geographical characteristics. These are:

- Informal settlements, many of which are on the windswept Cape Flats, a natural drainage area and wetlands draining into False Bay south of the city. This includes large areas such as Khayelitsha and Mitchell's Plain on public land, as well as smaller settlements on private land in the Philippi horticultural area, including Egoli and Jim se Bos.
- Informal backyard dwellings, or 'backyarders', a phenomenon encountered extensively in lower income but formal government housing settlements. The official tenants erect or use informal backyard structures to sub-let to lower income tenants. These are an ad hoc way of lower income tenants finding affordable housing and of the formal tenants increasing their income. They fill an important gap due to a shortage of social housing, but they come with particularly high fire risk. An example is Ward 65 within Cape Town's Sub-Council 19, in which there are a large number of 'backyarders', sometimes as many as 16 families on one property, in buildings that are essentially joined together.¹

The characteristics of these informal backyard dwellings and informal settlements are discussed more fully below, as this report aims to consider the policy context of fire risk in both types. The risks in both are high and affect a similar number of people throughout the city, even though the backyarders are spread throughout lower income government formal settlements rather than being located together.

An additional policy concern which is simply noted here, as it falls outside the scope of fire risk in informal housing, is that there are also frequently fires in private flats where many lower income residents live, with high occupancy rates per dwelling. These homes often have burglar bars and residents are sometimes not fast enough in undoing the locks to escape the fire, resulting in frequent fire deaths. Under the City's current procedures it appears that the Fire Department can only inspect such private dwellings if the owner makes a request to the Fire Chief, so fire risks are often not adequately monitored or addressed.² However, this procedure may be more limiting than the City By-Law on which it is based, which is the 2002 By-Law Relating to Community Fire Safety (amended in 2007 and 2015). It confers a broad mandate for the Fire Chief to initiate fire safety measures, which does not exclude information being given to the City of Cape Town Fire and Rescue Service ("the Fire Service") by people who are not owners or controllers of private property. This issue is discussed in more detail below.

2. The wider context: urbanization, informal settlements and the right to housing

Informal settlements have become a feature of most cities in South Africa, as they are in most other countries on the continent, and indeed in most developing countries around the globe. Africa as a whole is currently experiencing the world's fastest rate of urbanization and will soon cease to be a predominantly rural continent. The number of people living in cities is expected to exceed 50 percent by 2030, and some African cities

¹ Source: interview with Ward Councilor Mr Leslie Isaacs.

² Source: interview with Ward Councilor Mr Leslie Isaacs.

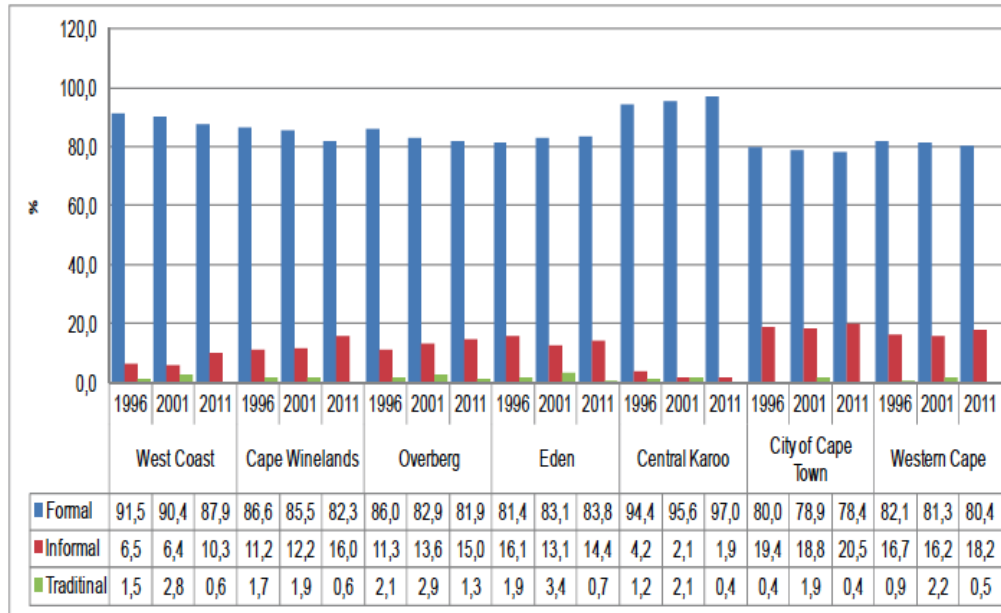
will grow by up to 85% of their current size by that time. In fact, UN 2015 figures for South Africa predict that by 2030 more than 71% of the country's residents will live in cities, and that by 2050 the figure is likely to be close to 80%.³

Urban population growth is fuelled by population movement from the rural areas, the increased proportion of births that then occur in the cities and, in South Africa, migration or temporary residence of nationals from other southern African countries who have arrived as refugees and/or to seek the economic opportunities of the most developed economy in the region. Such rapid population flows into cities is a major governance challenge in most developing economies, resulting in housing shortages and over-stretched infrastructure. Coupled with existing poverty and social inequality, such rapid urbanization is resulting in the expansion of informal settlements and other informal housing in and around major urban centers.

Cape Town is no exception to these trends, although government efforts to increase social housing have meant that the proportion of informal housing has not grown rapidly as in some cities, it remains high. Between 2001 and 2011 the City's population increased by almost 850,000, from 2,892,243 in 2001 to 3,740,026, a growth rate of 2.6% (Stats SA, Census 2011 Municipal Report, Western Cape, p.54). Figure 1 shows that the City also saw a small increase in the proportion of the population in informal housing, compared with formal housing, which by 2011 was 20.5% informal. Hence, despite substantial government investment in new housing construction and upgrading informal settlements, the proportion of the population in informal housing was not reduced and the actual numbers increased, with the 2011 figure being just short of 767,000 people in informal housing. Current estimates by City officials bring that number closer to 1 million, which includes informal settlements and other informal dwellings.

Figure: 1 Distribution of households by main dwelling type and district municipality in Western Cape Province - 1996, 2001 and 2011

³ <http://www.rdm.co.za/politics/2015/05/26/new-figures-show-staggering-rate-of-urbanisation-in-sa>



(Source: Statistics South Africa, Census 2011 Municipal Report, Western Cape, Figure 1.4.2.1.)

The City of Cape Town includes the informal settlements in its city mapping and development planning, although mapping is often not at a detailed level. They are also surveyed as part of the national census. In these ways, Cape Town’s informal settlements and their residents have a much greater level of recognition at a policy level than similar settlements in many other cities in Africa and around the world. Such policy recognition is a first step in improving the lives of the city’s poorest residents.

For the residents of the informal settlements, according to community members interviewed for this report, their current situation is not one of choice and they see it as a hopefully short transition to better housing and safer communities, with improved health and education services and greater economic opportunities. However, waiting lists are many years long, the criteria for social housing sometimes change, and the informal settlements themselves appear entrenched in Cape Town’s urban landscape. Some long-established settlements began as segregated settlements under the apartheid regime - such as Khayelitsha, first established in 1985 - some began as workers’ squatter camps and then became established, while others have grown more recently. The City’s Housing department website states that the demand for social housing is very high, with over half the country’s renters potentially qualifying for it on income grounds, and also that in Cape Town, between 18 and 21% of rented dwellings are shacks. While the City of Cape Town rents social housing apartments to 80 000 people, many more live in rental accommodation in backyards and private dwellings.⁴

Khayelitsha informal settlement’s residents also seemed aware that they have a legal right to housing and cannot be evicted from their homes arbitrarily. The 1996 Constitution of South Africa includes in its bill of rights the 'right to have access to adequate housing' (Article 26(1)). It further adds an obligation that the state 'must take

⁴ <https://www.capetown.gov.za/en/Housing/Socialhtest/Pages/default.aspx>

reasonable legislative and other measures, within its available resources, to achieve the progressive realization of this right' (Art. 26(2)). It then adds the procedural guarantee that:

'No one may be evicted from their home, or have their home demolished, without an order of court made after considering all the relevant circumstances. No legislation may permit arbitrary evictions' (Art.26(3)).

These provisions are further detailed in the Prevention of Illegal Eviction from and Unlawful Occupation of Land Act 1998 (Act no. 19 of 1998) (the PIE Act). Some interpret these rights as making it the Government's obligation to construct and provide the necessary housing, but in fact it is a safety net right to guarantee housing to those who cannot otherwise access it. Also, the government's obligation is to progressively achieve this right within its budgetary means. Adequate housing to fulfill the right can be provided by a range of means, including affordable private sector housing, affordable purchase schemes for those with some means (such as those called 'bond houses' constructed and sold to residents on terms by government in Cape Town), outright purchase and construction by residents who can access finance, as well as government social housing . The Constitution Article 24 also confers a right to an environment that 'is not harmful to their health or well-being' and Article 27 concerns the right to health care services, sufficient food and water and a social security safety net.

These important guarantees need to be taken into account in government plans to upgrade informal settlements, and especially if there are any initiatives to relocate residents to temporary or entirely alternative accommodation. Initiatives with the policy intent of upgrading may still fall foul of these provisions if the housing needs of current residents are not sufficiently addressed, for example, this was at issue in the 'Joe Slovo' litigation concerning a large scale government initiative in Cape Town. A four year dispute ended with a judgment of the Constitutional Court of South Africa - *Residents of Joe Slovo Community, Western Cape vs. Thubelisha Homes, Minister for Housing and Minister for Local Government and Housing, Western Cape* (Case CCT 22/08 decided on 10 June 2009). The Government (National, Province and the City of Cape Town) had sought to evict approximately 20,000 residents of the Joe Slovo informal settlement in Cape Town - established in the late 1980s - in order to construct affordable housing for poor people in the same location. The site is close to the CBD on the N2 route from the international airport, and the project is known as the N2 Gateway project. It was a nationally-instigated pilot project under President Mbeki's 2005 *Breaking New Ground: A Comprehensive Plan for the Development of Sustainable Human Settlements* policy, which enabled in situ upgrades. There were resident protests about lack of direct consultation, whether the new housing would be available and affordable, and the temporary relocation sites remote from transport and livelihoods. Initially many residents refused to leave, arguing their interests were not being protected.

Both the original Cape High Court decision and the final Constitutional Court decision in the Joe Slovo case held that the evictions were lawful under the PIE Act, but the appeal decision placed important conditions including that: no person could be moved unless alternative accommodation was provided; individual engagement with households was required prior to their move (not just large community meetings, which did not reach the many sub-communities); the parties should engage meaningfully on the timetable

for the move; and that 70% of the low cost housing to be built at Joe Slovo had to be made available to former or current residents of Joe Slovo who had applied for and qualified for government housing. These conditions have had an important effect on how government manages informal settlement upgrading, and appear to have discouraged such large-scale initiatives, although Phases 1 and 2 of the N2 gateway project have been completed, providing social housing rental units and bonded units (purchase on terms).⁵ This may be one factor behind the smaller scale initiatives currently seen in Cape Town, locally described as 'reblocking' – a process whereby small projects are undertaken by reaching agreement within the communities on reallocation of residences to clear space for emergency vehicle and other access, including service infrastructure, and homes are then rebuilt to safe standards. This may often require two storey buildings to accommodate the same residents in the area. Policy guidance is provided by the National Housing Code. Many parts of Khayelitsha have been upgraded, with paved streets, new housing and infrastructure, while new social housing construction projects are under way in Steenberg and Brooklyn.

Government faces a major challenge in both resources and logistics to reduce the number of people living in informal dwellings while the city's population is growing rapidly, as well as to reduce the fire and other risks people face while living there. However, in UNISDR's report, *Making Cities Resilient Report 2012: My city is getting ready! A global snapshot of how local governments reduce disaster risk*, the City of Cape Town was celebrated as a role model in the global Making Cities Resilient campaign 'in recognition of its innovative approach to informal settlement upgrading and ecosystem protection' (p.24). The report noted that national and local governments in South Africa have recognised since 1994 that there was a lack of urban infrastructure in previously non-white areas and informal settlements, and have seen the need for positive action to address the disproportionate risks faced by the poorer sectors of society, in particular the need to improve living and safety conditions in densely populated informal settlements. Concerning the City's urban upgrading programme that began in 2009 with five pilot projects, the City's main innovation was seen by UNISDR as partnering with disadvantaged communities to create steering committees and identify community assets and challenges, in part through community surveys which then fed into Community Action Plans. These plans were to 'improve basic infrastructure, expand roadways to allow access for emergency vehicles, and improve access to water and sanitation,' as well as education facilities where needed (p.41). This approach was also highlighted as an example of a 'mainstreamed approach to risk reduction in addressing multiple challenges simultaneously, and the importance of government leadership in facilitating relationships between stakeholders.' (p.41). Such a community project is currently under way in the low income but mainly formal residential area of Manenberg, Cape Town, so the model is still in use in the City and can be used in upgrading fully informal settlements also.⁶

⁵ <https://www.westerncape.gov.za/service/n2-gateway-project-accommodation-applications>

⁶ <http://www.politicsweb.co.za/politics/progress-on-manenberg-upgrade-plans--cape-townwcap>; and https://www.capetown.gov.za/en/stats/2011CensusSuburbs/2011_Census_CT_Suburb_Manenberg_Profile.pdf

3. National and Local Disaster Risk Management System

The national *Disaster Management Act 2002* (Act 57 of 2002, as amended by Act 16 of 2015) requires national, provincial and municipal level governments to undertake risk assessments, to establish disaster risk management (DRM) centres, and to develop DRM plans, as well as to resource and coordinate disaster response.

The City of Cape Town undertook a comprehensive disaster risk assessment during 2009/10 but determined this would not be a public document (in part because of the level of detail on individual properties), but that it should be used as the basis for internal city planning. It also developed a City DRM Plan, the 2012 *Municipal Disaster Risk Management Plan (Rev. 5)*. This document also stated it was only for internal use, but as it is now readily available on the internet through normal search techniques, it is treated herein as a public resource. This approach to DRM planning as a confidential government issue is unusual. It does not seem consistent with the participatory model of upgrading settlements, described above, nor with the Sendai Framework for Disaster Risk Reduction 2015-2030 (or its predecessor the Hyogo Framework for Action 2005-2015) to which South Africa is a signatory. These support broad community engagement in risk mapping and disaster risk reduction (DRR), including civil society and the private sector as well as government agencies and technical experts. Such a participatory approach is now generally considered best practice internationally, as the only means to stop the creation of new underlying risks in developing economies as well as to reduce the impacts of existing known hazards and the projected effects of climate change. That is, effective DRR requires a whole of society approach because governments do not have the capacity or resources to do it alone, and because it requires a cultural shift, especially in attitudes to natural hazards,, to approach them as risks that can be managed to prevent disaster.

The City invests very significant resources in DRM. Its DRM Centre reportedly has the biggest budget of any city government in South Africa, with 80 staff, including 25 logistics staff, and a fleet of 14 vehicles that include specialist disaster response equipment. It is well resourced to provide excellent support in disaster response. But a greater focus on DRR may be necessary to address the underlying disaster risks of the City as it develops, such as the inherent fire risk of its current informal settlements and informal backyard dwellings, as well as the annual hazard of flooding in low-lying areas (also affecting informal settlements very significantly), and projected future effects of sea level rise due to climate change. This would most likely require a high-level political commitment and a policy focus on city-wide DRR, which would need to be implemented through all departments, as well as being developed and implemented through engagement with civil society and the private sector and other stakeholders.

The City's 2012 DRM Plan noted above is nevertheless encouraging in its objectives. The plan states that risk reduction and preparedness is its primary objective (Para 10). At that stage it was not yet a developed plan for city-wide risk reduction, but rather a list of the city-wide strategies that needed to be developed, e.g. response and recovery planning, contingency planning, drills, rehearsals and exercises, training and exercises, management and institutional arrangements, mutual aid agreements, and early warning systems. If these have since been developed more fully in other internal documents the

City may have moved to a more solid foundation for DRR, albeit not yet in the public domain.

The other encouraging aspect of the 2012 DRM plan is that, amongst ten critical priorities for action, it includes the need to:

- establish disaster prevention / risk reduction programmes that focus on the most vulnerable communities and which endeavour to support sustainable livelihoods.
- design a programme in support of fire protection on the urban fringe (which includes both formal and informal settlements exposed to wildfires as well as urban fires);
- undertake extensive education and awareness programmes on best practice before, during and after disasters.
- include DRM issues in the City's Integrated Development Plan (IDP)
- include DRM issues in the plans & programmes of all City entities

If these priorities remain in place, they provide a sound starting point for an increased focus on reducing fire risk in informal settlements and other informal dwellings, as well as their inclusion in the City's Integrated Development Plan, especially residential development and upgrading. However, there appears to be a need for a more public and inclusive process to engage communities in DRM and DRR, especially informal settler communities. This will likely require a high level policy mandate that can unite the different components of the City's efforts to respond to emergencies, reduce disaster risk and plan for safer dwellings and settlements.

4. Fire disaster risk in informal settlements and informal backyard housing

Demographics and housing in greater Khayelitsha

According to 2011 census data, as summarized in *City of Cape Town – 2011 Census Suburb Khayelitsha July 2013*, the population of the whole of Khayelitsha was almost 392 thousand, made up of almost 119 thousand households. Anecdotal evidence suggests these numbers have continued to increase since 2011. In 2011 the population was 99% Black African (national origin is not collected, although anecdotal reports during the mission suggested poor migrants from other African countries tend to use backyard housing and high-occupancy private rental dwellings as their first accommodation option on arrival). Although only 45% were living in formal dwellings at that time, with 8.2% in backyard dwellings and 46.3% in other informal settlements dwellings, still the majority of households had access to piped water in their dwelling or inside their yard (62%), while a higher proportion had access to a flush toilet connected to the public sewer system (72%), had their refuse removed at least once a week (81%), and used electricity for lighting in their dwelling (81% - whether or not the connection was a formal one). Although 62% of the labour force (15 to 64 years) was employed, monthly incomes were low - 74% of households brought in R3,200 or less. The low income levels are related to a range of economic factors and historical disadvantage, which includes relatively low education levels, with only 36% of those aged 20 years and older having completed Grade 12 or higher.

In terms of housing, the 2011 census also indicated that 49.9% of Khayelitsha residents lived in houses that they owned and had fully paid off, and 6.8% were in houses they owned but had not fully paid off - more than the proportion in formal housing, so some of these must have been informal dwellings. Also, 11.8% were in rented housing, and 27.6% in housing occupied rent free (these could also have been either shacks or formal homes). These figures suggest a high level of stability of residents in Khayelitsha, rather than an itinerant community, with overall 56% being home-owners, and almost 28% living rent free, with just under 12% tenants.

Although the census does not collect crime statistics, community members met during the mission were very open about the fact that crime rates are high and that, even within their own communities, they are in constant fear of theft and robbery, under the threat of violence. This has a major impact on their quality of life. It also makes it difficult for outsiders to work in the communities without very real fears for their personal safety. Such 'outsiders' may also include fire fighters and other government service providers, although the local police are based in the community and appear to operate successfully on a community policing model with a highly visible presence and engagement in the communities.

There are strong self-defined communities within Khayelitsha, and there is a range of different types of leadership structure. Some leadership lies with elected officials such as councillors, and others are informal systems of community leadership, partly traditional and partly ad hoc according to circumstance. These systems of community self-governance were part of the Fire Sensor Project structure, which engaged with community leaders in the target areas of Khayelitsha, who worked with CORC and SARCS staff, and alongside the SARCS volunteers, to gain community interest in the fire sensors and to facilitate the roll-out of the sensors (which were installed in the homes of people who had agreed to purchase them for the subsidised price of R20 apiece). These leaders remain the core group for local fire response when sensors are activated and will be the key to long-term sustainability of such community-based early warning and response systems.

Community leadership structures in Khayelitsha could also be engaged directly by government in fire awareness and other risk reduction campaigns, as well as in processes for urban upgrading such as were described above, where they would likely form the core of the local committees.

At a practical level, in accordance with its legal obligations for adequate housing, the Government aims to provide access to the electricity grid, and basic water and sanitation in informal settlements, including city garbage collection. For example, in Khayelitsha, it can be observed today that some of the housing has been upgraded to approved residential standards, with planned streets, mains water and electricity. Other parts have electricity supply poles and cables reaching many of the shacks, access to water from communal street taps, and portable toilets. The more recently constructed shacks may have none of these.

Most of the shacks in the project areas in Khayelitsha are constructed of timber frames with corrugated iron roofing and walls, according to standard models which local providers construct. However, residents with fewer resources salvage materials or contract for cheaper housing, which is often timber and more flammable. The shacks are

very close together, in many cases without room for a person to pass between, but there are also open streets for foot traffic, although often not wide enough for cars or trucks. As these settlements continually expand, residents also improvise with extensions to the electricity cables, resulting in the phenomenon that firefighters refer to as the 'spider webs' of low cables. These present a fire danger in themselves, due to lack of load control circuit breakers, which causes frequent electrical short-circuit fires. Due to their low height, these cables are also often damaged by fire and emergency vehicles responding to fires in the settlements.

Although house numbering is often related to formal connection to the electricity grid, and the extent of mapping differs between different areas, there are recognized systems of house and street numbering within the informal parts of Khayelitsha, to the extent that residents are able to have regular mail delivered to their homes. There is potential to formalize these systems sufficiently so that they can be part of shared mapping with the Fire Service and Police, and thereby improve accuracy of fire location reports.

The By-Law on Community Fire Safety mandates the Fire Service to monitor fire safety and to take remedial action required, including by entry into premises as necessary (Article 4). However, the present investigation did not obtain information on how this obligation is implemented in informal settlements on public land in terms of mechanisms such notification to the Fire Service of hazards, or inspections by the Service on their own initiative.

Fire risk in informal settlements on private land

The larger informal settlements mentioned are on public land, but as noted earlier there are also smaller informal settlements on private land in the Philippi horticultural area, including Egoli and Jim se Bos (Ward 80, also in Sub Council 18). Egoli and Jim se Bos are both about 20 years old. Cape Town's 2011 census figures estimate that Egoli and Jim se Bos host about 350 and 300 homes respectively, but more recent unofficial counts give much higher numbers. They have the same fire risks as other informal settlements in terms of density. However, as they are on private land, there is less ready access to Fire service advice and monitoring for fire prevention. This is because under the City's current procedure, the community reportedly has to ask the land-owner's permission for fire inspection, and thus relies on the goodwill of a landowner who may well wish to remove the settlers rather than improving fire safety in the settlement.⁷ This request procedure appears to have been made in compliance with Article 10 of the By-Law on Community Fire Safety, which is headed 'Reporting a fire hazard and other threatening danger' and then states that 'An owner or the person in charge of the premises, upon discovering any evidence of a fire hazard or other threatening danger pertaining to this By-law, must immediately notify the controlling authority.' However, although this article is an obligation on owners to report, it is not a prohibition on tenants or members of the public using other means to give information to the Fire Service about fire hazards.

⁷ Fire and Rescue Service Request for Fire & Life Safety Service (Form to be completed by property owner or manager).
https://www.capetown.gov.za/en/FireAndRescue/Documents/Safety/Request_for_Inspection_1etter.pdf

If the above understanding is indeed a commonly held one, and the mechanism of an owner request for inspection is currently the only way the City accepts preventive fire hazard information from the public concerning private property, then it appears to be a misinterpretation of the By-Law. For the much broader mandate of the Fire Chief (as delegated to the Fire Service) in the By-Law under its enforcement provisions allows them, whenever they regard it as 'necessary or expedient to do so' to 'enter any premises at any reasonable time to ensure compliance with this By-law' (Article 4). It empowers them to take summary action to alter any condition that 'presents an immediate fire hazard or other threatening danger' - including by evacuation or building closure; and such remedial action may be charged to the owner or controller of the property (Article 4). Clearly there is a power to enter private property without an owner request. The question then is by what procedure the Fire Service becomes aware of fire danger on private property. It seems clear that it would undercut these enforcement provisions if the only information accepted by the Fire Service comes from owners, who may well have a vested interest in not requesting an inspection due to the costs of compliance. The emergency number is clearly not the appropriate one for reporting hazards that may cause fires (but have not yet done so), and indeed the City's DMC website exhorts people not to use the emergency number (107) for anything other than emergencies, and gives the City general inquiry number for all other matters.⁸

This safety issue justifies a review of the relevant fire safety reporting procedures at City level, or at least a public education campaign, to ensure that members of the public (including informal settler tenants on private land) know they are free to report fire risks, and indeed should do so, whether these are on public or private property. This may require the City to establish a clear procedure for public reporting of fire hazards that does not require owner permission. It is then the responsibility of the Fire Chief (operationally the Fire Service) to verify and if necessary act on that information. Such participation in fire safety awareness by tenants and members of the public is likely to be an important component in any city-wide approach to reducing fire and other risks.

Fire risk in backyard dwellings

As noted earlier, informal backyard dwellings are mainly found throughout lower income public housing areas, where formal tenants sub-let to informal tenants. These structures range from converted garages to prefabricated small wooden houses intended for children's play, described 'Wendy houses', which are used extensively in the example are noted above of Ward 65. Backyard homes have a similar risk of fires starting as the shacks in informal settlements, because of the same issues of electrical wiring and use of fires in cooking, etc. Their situation is better than informal settlements in the sense that fire truck hoses are usually able to access them from the street (although fire hydrant pressure is often not high enough), but as the small wooden dwellings are even more flammable than most materials used for shack construction they also burn more rapidly, which reduces the likelihood of residents escaping (especially children and elderly people) or of fire trucks arriving at the scene on time.

Aside from the longer-term desirability of reducing this type of high risk housing, there is potential for indirect regulation of this risk by changing the safety requirements of

⁸ <https://www.capetown.gov.za/en/DRM/Pages/default.aspx>

Wendy houses, even though these are sold as play houses and not certified for residential use.

5. Fire risk reduction, mitigation, prevention and preparedness in informal dwellings

Prevention of fires is a major challenge in informal dwellings, as small incidents that would be unlikely to result in major fires in formal housing, can quickly spread in the confined environments of small shacks placed close together. The causes of shack fires are not well documented at a formal level, but according to the experience of SARCS, community members and firefighters, they start from a range of different causes, including electrical short-circuits, cooking accidents (especially from paraffin stoves and some open fires), use of candles for lighting, children playing with matches, cigarette smoking, other accidents with flammable materials, and arson. The incidence of such fires can likely be reduced through community and school-based fire awareness training, which the City of Cape Town's Fire and Rescue Service (CTFRS), SARCS and other organizations undertake, but it is also important to focus on the inherent fire risk of such urban environments.

Physical risk can be reduced with different choices of building materials, as even corrugated iron sheeting walls can sometimes contain fires within a shack, where wooden structures would spread it further. Some of these risks can also be reduced by measures such as the use of fire-retardant paint on shacks, which the City of Cape Town is now promoting in its '*Mesa Mullion Stop the Fire* campaign' launched by the City Mayor in November 2015, under which the City is engaging people to paint shacks with a 'paint' which, when exposed to heat, expands to form a fire retardant shield and prevent the spread of fires.⁹ The City is distributing this paint free of charge, but as yet in limited quantities in specified project areas. Such measures could have an additional risk reduction impact for informal dwellings such as the wooden backyard 'Wendy houses'. In fact, one suggestion during the interviews was that a local government regulation could require all prefabricated Wendy houses to be pre-painted with fire retardant material, which could reduce losses in backyard dwellings, which are often attached to each other or placed very close together.

The Fire Service provides fire education visits to schools, institutions and organizations upon request, with interactive programs for all age groups.¹⁰ Feedback during the consultant's mission indicated this includes community based awareness aimed at adults in informal settlements, as in other localities in the City. For example, they participated in the Fire Sensor Project simulation day and made a fire safety presentation as part of the exercise. The policy review was not able to obtain information on the extent to which the programs are generally tailored to the

⁹ Source: CoT Media Release, 1 Dec 2015
<https://www.capetown.gov.za/en/MediaReleases/Pages/CitylaunchesMisaUmliloStopFirecampaign.aspx>.

¹⁰ <http://www.capetown.gov.za/en/FireAndRescue/Pages/Publiceducation.aspx>

circumstances of informal dwellings or informal settlements in the relevant areas, but their materials include a specific brochure on fire safety in informal settlements.¹¹

The Fire Service also has responsibility for enforcement of the Community Fire Safety By-law, and for it to be effective in its risk reduction role it needs inputs from the public – including informal settlers – about fire hazards.

The City Disaster Risk Management Centre has a multi-hazard approach including fire hazard, and is well equipped and focused on disaster response. However, despite the City's engagement with the UNISDR Resilient Cities initiative, there does not appear to be a high-level policy focus on city-wide disaster risk reduction (as opposed to operational response), especially by the DRM Centre.

Whatever prevention education and physical measures are taken, it is clear there remains a need for very rapid and effective response to prevent shack fires from spreading between dwellings in such close proximity. Community response is a necessary first step in any fire prevention and response strategy, whether this is done informally, or through systems such as that being piloted in the Fire Sensor Project (devices that detect sudden increases in heat, plus community alert and response teams). Professional disaster management and fire fighting services remain an essential backup to manage the full range of fire incidents that occur.

6. Fire response in informal settlements

There is generally little capacity or suitable equipment for immediate and effective local response by residents, as there are not resident response systems or teams and little knowledge about fire fighting. Fire detectors and extinguishers are generally not available, and in some informal settlements (such as the parts of Khayelitsha included in the Fire Sensor Project) there is only slow-flowing water available at intervals along the street. This early response issue was of course the main need addressed by the Fire Sensor Project, which combines community early detection and response. There is potential to create greater community capacity through training and equipment for local first responders, even to the extent of establishing formal micro fire stations at regular intervals throughout the communities as part of a targeted Fire Service approach to fire risk in informal settlements.

The Fire Service is a professional fire brigade of long standing, which has 30 fire stations serving Cape Town's population of 3.5 million people (covering an area of over 2,561 km²); and 1,300 staff members, including professional fire-fighters, fire and life safety staff, command and control staff, trainers and support staff. The Fire Service deals with all types of fires, and also handles medical emergencies and rescues including urban search and rescue, and hazardous material emergencies.¹² The City has placed fire stations close to the most high-risk informal settlements.

Despite this investment, both fire service officers and Khayelitsha residents report that fire responders often do not arrive at the scene in sufficient time to control fires, and

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http://www.capetown.gov.za/en/FireAndRescue/Documents/Education/Educational_Pamphlet_Informal_Settlements.pdf

¹² Fire Service website: <http://www.capetown.gov.za/en/fireandrescue/Pages/default.aspx>

that they then tend to play a mopping up and documenting role. This is due to a range of factors, including the time lapse between when a fire starts and the local fire station receives the call-out. For example, there is apparent confusion over who to call and which number; the 3-digit emergency numbers are not necessarily accessible using a mobile phone with no money on it; there is a tendency for people to call the police first, and the procedure from that point is not always clear as police sometimes attend the fire call first; and some community members fear personal financial liability for calling the Fire Service.. All of these factors could be improved from the policy side, by making the emergency number system more accessible, and from the community side with greater education and awareness on who to call when in emergency situations.

There is also frequently confusion about the location of the fire, as callers often cannot give accurate information, and this may often not be possible where there are no visible street names, and where there are similar street and road names in the same vicinity (as often occurs). The maps available may not be adequate or up to date, and there is either irregular house numbering or the numbering system is not shared/known by both the community and the Fire Service. These issues could be remedied at least in part by cooperative mapping and/or naming, numbering and signage.

There is also difficulty of access for the large fire trucks preferred by the Fire Service.. (which have high water capacity), due to narrow roads, lack of roads, and deep sandy or wet terrain that would normally require all-terrain vehicles, as well as low electrical wires that may often be ripped out by the trucks and require additional caution in speed. There is therefore potential to explore with the Fire Service different approaches to fire fighting in informal settlements, including vehicles and equipment tailored to the physical realities of the informal settlements.

A number of Khayelitsha residents reiterated the view that the Fire Service 'takes their own time' to get to shack fires, and that they do not seem to accord them the same attention as fires in formal settlements. The fire fighters, on the other hand, assert that they respond to shack fires as a very high priority precisely because they know that the fires spread so fast, and that they endanger people's lives and destroy their uninsured property.

The effects of shack fires are far-reaching for local residents, often resulting in people dying or being seriously injured in fast-spreading shack fires. In addition, by their nature informal dwellings cannot be insured and it is rare for informal settlers to have access to any insurance for their furniture and personal belongings, so that the loss of their home in a fire means they are starting all over again. This reality means that the stakes are high for residents facing shack fires, and it is not therefore surprising that emotions run high during and after these incidents. Even if fire fighters' response time is very rapid, or if there is a delay caused by the factors outlined above, the fact that the fire may have already done its damage appears to be the dominant factor for affected people in this situation. Hence, fire fighters sometimes arrive at the scene to find a large group of angry and traumatised people who have just lost their homes and all their belongings. A number of incidents have also been reported where fire-fighting operations in informal settlements were disrupted by residents trying to take control of the hose to douse their own shacks, or in some cases cutting the fire hose to deliver water to their own homes, when the fire fighters were making a priority of another

group of dwellings. These reports overall give the impression that there is a lack of trust of fire fighters by the residents of informal settlements, in that they don't believe the Fire Service gives shack fires the same attention as other fires, but rather treat them as a lower priority.

One aspect of the apparent distrust by informal settlers of the Fire Service could relate to the sense that fire fighters are mainly outsiders, predominantly from other ethnic and language groups. This is an issue worth exploring, as if there are in fact fewer Xhosa-speaking Black Africans from poorer backgrounds in the Fire Service, a long-term measure to break down the barrier could be greater involvement of informal settlers in the Fire Service. Perhaps the Fire Service's selection criteria is indirectly discriminatory against recruits from poorer backgrounds, not because it intends to be so, but because the educational criteria and physical fitness requirements may be hard for them to meet with fewer educational opportunities and poorer medical care and nutrition – in particular the need to have Grade 12, with maths and physics preferred, and to be physically and medically fit.¹³ If these requirements are indeed necessary to be a professional fire fighter, then it may be necessary to involve youth from informal settlements at a much younger age and potentially make available scholarships or other assistance to overcome these disadvantages. There may be an even more preliminary cultural barrier because of the distance between the informal settler communities and the Fire Service,, and this too could potentially be overcome through a higher level of community engagement with young people, possibly through fire fighter training as volunteers or trainee fire fighters initially serving their own communities.

The Fire Service participated with SARCS and the American Red Cross in training SARCS volunteers and community leaders in basic fire fighting as part of the Fire Sensor Project, and also in the simulation at Khayelitsha community centre. There is clearly goodwill that can be built upon.

7. Fire recovery and reconstruction

Other than the delivery of humanitarian assistance by SARCS, NGOs and the Government following a fire, there appears to be no formal policy or mechanism to address recovery and reconstruction. Reconstruction of informal settlements is of course a legally fraught area for any government, unless they are able in the process to upgrade or formalise them. Currently, residents reportedly rebuild very quickly in the same locations, to ensure they retain their piece of land (and their rights relating to eviction), replicating the same risks in terms of proximity and materials. This aspect of recovery needs to be approached with caution, as in the apartheid era, devastation of informal settlements by fire was used as a mechanism or opportunity to clear them and to forcibly relocate residents, including in the initial period of partition laws when communities were forced to disperse and separate on racial criteria. However, with prior framework agreements with communities it may be possible to agree on some fire resilience improvements when they undertake reconstruction, such as agreed relocation of some people's dwellings to allow fire vehicle access or to create fire-breaks within the community. Such options would need to emerge from community based fire safety initiatives.

¹³ <http://www.capetown.gov.za/EN/FIREANDRESCUE/Pages/TrainingFAQs.aspx>

8. Conclusions and recommendations

The Cape Town residents most vulnerable to fire disasters that result in loss of life, injury and loss of uninsured possessions are the city's poorest people, who live in informal settlements, in informal backyard housing, and in multiple occupant private flats that are reportedly not subject to adequate fire inspection under current procedures. These conclusions relate primarily to those in informal housing as that is the focus of the Fire Sensor Project.

Informal housing in Cape Town is an inherently high-risk environment for fire disasters because:

- Fires start often and easily because of the necessary use by low income households in informal dwellings of cheap paraffin stoves, open fires, and candles for lighting, in addition to the usual range of residential fire accidents related to cooking, cigarette smoking, and children playing with matches or flames (made more dangerous by the small spaces and therefore proximity to flammable material), as well as some particular sources of fire in informal settlements that come from electrical short-circuits in illegally tapped electrical wiring, from fires that are started in nearby vegetation to kill snakes, and sometimes arson.
- Fires spread quickly because buildings in both informal settlements and backyard housing are small and close together, many of the materials used are highly flammable, and Cape Town has almost constant sea winds that fan fires and increase the rate of spread. The backyard 'Wendy houses' and the cheaper dwellings in the informal settlements are often constructed entirely of timber that is not treated with any fire retardant material; these are the biggest risk. Some other informal housing with timber frames and corrugated iron roofing and walls is slightly less susceptible to fire, and fires that start within them can sometimes be contained, but this also depends on how much flammable material is present in the furnishings. These building materials are also more expensive for informal settlers.

The following recommendations are made for the American Red Cross and SARCS as worthwhile extensions to the Fire Sensor Project, and also as stand-alone advocacy objectives aimed at reducing the risk of fire disasters. They are based on the above analysis of the legislative, institutional and policy environment for government fire disaster risk management in informal settlements and other informal dwellings in Cape Town. Some of these proposals were also part of group discussions on the policy research at the Fire Sensor Project's Lessons Learned Workshop in Nairobi from 13-15 January, and their current formulation has had the benefit of insights from other workshop participants.

These are divided into short and medium horizon objectives (also a structure used in the lessons learned workshop). While some suggestions are made as to the desirable outcomes, the expertise and commitment to flesh out such ideas and agree to their implementation (if they consider them worthwhile), will lie with the informal settler communities, SARCS, American Red Cross and partners, as well as the City Fire Service, the DRM Centre and high level City governance.

A. Short horizon initiatives – in the next year

1. To help reduce the physical fire risks in informal housing in the short term

With local government:

- Support the City initiative to make fire retardant paint freely available to informal settlers to reduce fire spread between shacks, and advocate for additional resources for the programme.
- With the Fire Service, conduct community education on affordable alternatives to using flammable materials in shack construction and furnishings.
- Explore with City regulators quick alternatives to manage fire safety of backyarders, for example by requiring that all Wendy houses sold have fire proofing, such as the use of fire-retardant paint.¹⁴

Fire Sensor Project add-ons - with community and partners and local government, to explore the potential for companion projects to:

- Improve fire location accuracy by sharing Fire Sensor Project mapping, as well as other informal information related to house numbering, street naming and other locating identifiers for fire calls, to update the official maps. This could be reinforced by working with the communities to erect signs with their street names or numbers and to add clearer house numbering.
- Reduce the use of naked flames in shacks through affordable cheap versions of alternative technologies, such as small solar lamps instead of candles for lighting.
- Develop a fire sensor system that would work for backyarders, whose homes are grouped together in small numbers but separate from neighbours, including identifying what type of community response might be effective.

2. To build sustainable capacity for more effective community based fire response

Fire Sensor Project add-ons - with local government, community and partners

- With the Fire Service, consolidate the fire training already received by Project community response teams as a starting point for community first response following early alert by the fire sensors or other means.
- Seek support from the Fire Service to establish micro fire stations and formally trained first response teams within the Fire Sensor Project communities, using the City's training resources, and equipment.

3. To begin addressing the lack of trust of the Fire Service by informal settlers

With local government and community, begin discussions with the Fire Service on how the City's investment in fire safety can be both more inclusive of and better meet the needs of informal settlers, for example:

- Propose that the Fire Service commences a review of vehicles, equipment and fire fighting technologies used in informal settlement fires, in consultation with SARCS

¹⁴ A suggestion made by Councillor Leslie Isaacs

and community leaders, with the aim of better tailoring the response to the physical environment of the informal settlements (e.g. to reduce problems with access by using smaller, all-terrain vehicles, or reducing the need for so much readily available water by using other techniques such as foam); and

- Facilitate active recruitment of informal settler youth into Fire Service volunteer and training programmes, which could commence as joint initiatives with SARCS and the Fire Sensor Project partners.

4. To address the need to get fire trucks to the scene faster

Fire Sensor Project add-on – with community, partners with local government

- SARCs and American Red Cross could explore with the project communities and partners, and the Fire Service, the feasibility and advisability of a direct link to the existing and future Fire Sensor systems. Any decision to scale up the use of fire sensors in Cape Town informal settlements and other informal dwellings will depend on the assessed outcomes of the Fire Sensor Project, and/or the business model adopted by the project partners. But if further roll-out is planned, serious consideration should be given to negotiating a system that includes direct communication between the ‘mother device’ and the Fire Service whenever a device is triggered (a capacity deliberately built into the system by its designers, Lumkani). This would allow immediate dispatch of response vehicles and crews from the nearest fire station in all instances, with the additional assistance of accurately locating the fire through the mother device. While this would mean a certain proportion of false alarms, it could significantly reduce the time between a fire starting and the Fire Service teams’ arrival, increasing their capacity to control fires at an early stage. This would likely result in a significant reduction in loss of life, injury and property.

With community, partners and local government:

- Explore whether the Fire Service would be prepared to install and pilot manually operated public fire alarms in informal settlements
- With the Fire Service, conduct community education and liaison with local police on a range of key issues concerning how to call so that fire fighters can arrive in the right place, sooner. For example on:
 - Which numbers to call when, including prominent display of the numbers in informal settlements (e.g. at water points, on street signage, on toilet doors)
 - The fact that callers are not liable for the cost of the Fire Service attending a fire (unless the call is fraudulent)
 - The importance of police reiterating in the communities that they are not the first call for fires, as this can cause delays.

5. To engage more closely with City leadership to establish SARCS as a key local partner in urban risk reduction as well as disaster response

With local government:

- Establish regular high-level liaison meetings with the City leadership, to establish SARCS’ role as a key partner in City level DRM policy, planning and implementation

concerning urban disaster risk reduction and prevention, as well as emergency response and recovery.

- Encourage the DRM Centre and City to make more risk mapping and DRM planning publicly available and participatory, as well as more focused on risk reduction and resilience across City programming. This would bring it into closer alignment with the Sendai Framework, recognizing that DRR is not simply a function of government, but requires broad social engagement to be effective.

6. Advocate for a specific public reporting mechanism for fire hazards on both public and private land

With local government:

- Propose that the City review the current inspection and fire hazard reporting mechanisms, along with a public education campaign. The aim is to promote reporting of fire hazards by members of the public – including informal settlers and tenants – whether the hazards are on public or private property, in line with the enforcement powers of the Fire Service under the By-Law on Community Fire Safety. In particular, there is a need to address fire safety issues in high-occupancy formal dwellings, as well as informal settlements on private land, to change the perception that it is only owners or controllers who can report fire hazards.
- Propose that the City focuses an awareness campaign on owners and controllers of residential buildings and any other private property, to reiterate that they have an obligation to report fire hazards under the By-Law on Community Fire Safety, and that the Fire Service is mandated to enter their property as necessary to remedy fire hazards.

B. Medium horizon initiatives - in the next 2-5 years

7. To address the confusion and inaccessibility of emergency telephone numbers, through government action.

With local and provincial government:

- Based on the issues noted above concerning emergency telephone numbers, it seems necessary to simplify the system, as between local, provincial and national emergency numbers. It is also necessary that any outcome is accessible to residents of informal settlements on a practical level. For example, an option would be to adopt a single, short, emergency telephone number that can be called from a mobile phone that has no credit. This would require discussion with, and negotiation between, the different levels of government.

8. Continue building better relations between the Fire Service and informal settlers by inclusion of community members in the formal fire fighting system

With local government and communities

- Work with the Fire Service to establish fire volunteer networks in informal settlements which are formalised as part of the Fire Service, with accredited

training, and aimed especially at young people, with links to career tracks as professional fire fighters.

- Begin discussions with the Fire Service to look at their current recruitment system and criteria, to (a) determine whether or not it results in good representation across the ethnic and social groupings of Cape Town, and in particular whether youth from informal settlements are entering the service, (b) if necessary, make it more accessible to disadvantaged youth through positive measures such as scholarships and volunteer training during secondary schooling, which would allow youth from informal settlements to meet the recruitment criteria.

9. To address the need for City-wide DRM and a greater focus on reducing disaster risk across all aspects of urban governance

With local and provincial government, communities, civil society and private sector:

- Work with City leadership, DRM Centre, Fire Service, and Housing and Settlements departments, to plan and obtain resources for a city-wide resilience building programme to re-orient local policy towards reducing risk and preventing disasters as part of planning for sustainable and equitable development of Cape Town. A methodology such as that developed by Arup for the Rockefeller 100 Resilient Cities campaign would require high level political and policy support and engage civil society, disadvantaged communities, and the private sector in order to integrate policy approaches and achieve successful implementation.

Annex I: Consultations – events and interviews during report preparation

Meetings and events attended by the consultant

- Briefing meeting with SARCS Fire Sensor Project team, 9 November 2015: Levona van Aarde, Mandisa Ntuli, Fernel Campher, Nomalungelo Mjwara
- SARCS Fire Sensor Project Security workshop, 10 November 2015: with Khayelitsha community leaders involved with the project and SARCS volunteers. Held informal background conversations with community members and volunteers concerning their personal experiences and views about fire safety in Khayelitsha.
- Fire Sensor Project fire sensor simulation day exercise, 19 November 2015, Khayelitsha Community Centre. Held informal background conversations with a number of those participating in the exercise who spoke English.
- Frog fire sensor business model brainstorming, Friday 20 November, 2015.
- Lessons learned workshop, Nairobi, Kenya, 12-15 January 2016. During preparation of the report, the Consultant participated in the three-day lessons learned workshop for the wider project in Nairobi, Kenya, from 12-15 January 2016, and received additional feedback on preliminary findings and recommendations.

Interviews conducted

- David Gluckman, Director, Lumkani, Woodstock, Cape Town (project partner; development and production of fire sensors)
- Leslie Isaacs, Ward Councillor: Ward 65, Cape Town, with Neil Jacobus
- Mark Pluke, Area Head, Area South/West, Disaster Risk Management Centre, City of Cape Town
- Pmumeza Mohakayi (community leader, CT Litha Park Site B, Khayelitsha, involved in Fire Sensor Pilot Project) and Unati Kweyi (community representative, WB, Site B, Khayelitsha, involved in Fire Sensor Pilot Project), interviewed together.
- Thandeka Tshabalala, Community Organisation Resource Centre (CORC), City of Cape Town (project partner, community liaison, through informal settler network and prior engagement with Lumkani trial)

Note: Police and Fire Service spokespersons were not available for interview during the period of the mission, which was during the period of preparation for the peak fire season.

Annex II: References and resources

A. National Laws & Policies

Laws

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B. Western Cape Government – Provincial Policies

Western Cape Government, South Africa. 2013. Provincial Strategic Plan: 2014 – 2019

<https://www.westerncape.gov.za/text/2015/march/final-psp-2014-19.pdf>

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