Informal settlement community-based adaptation towards fire vulnerability (Feb. 2021)

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Context

Informal settlements are spaces of extreme poverty, poor living conditions, and constructed from poor building materials. They are most often located on marginal precarious sites exposed to high environmental risk, and frequently fire hazards. Informal settlement fires often displace people by their hundreds, destroying properties and causing serious injuries, and disrupt livelihoods. During the period 2018 – 2020, while the iQhaza Lethu team has been working in 10 pilot settlements to drive participatory, incremental upgrading, 15 fires in these 10 settlements were recorded. These caused 10 deaths and the complete destruction of 461 informal structures, leaving many hundreds of families without shelter and destroying identity documents, school uniforms and other valuable items. A particularly devastating incident in Havelock informal settlement destroyed more than 220 homes, leaving less than 30 standing in December 2019.

The ability to 'bounce back' from the impact of fires is a complex and slow process. Not only are homes, possessions and sometimes lives, destroyed, but the loss of identity documents, bank cards and other documentation also have a massive impact.

eThekwini Municipality, through iQhala Lethu (IL) Incremental Upgrading Partnership Programme has initiated a process of empowering communities with fire prevention and safety skills, and knowledge. This is to enable communities to act as mitigating agents and minimize the possible impacts of fire. This initiative fosters state-citizens relations, which are generally critical for informal settlement governance.

The nature of informal settlements are 'fertile grounds' for devastating fire events as they are highly dense, and made up of combustible materials. Compounding the problem, the average

emergency services response timeframe is often inadequate as construction materials fuel fires at an uncontrollable rate, access to households deep in the settlement may be limited to footpaths and high pressure water points suitable for connection to fire hoses are scarce. Site visits undertaken with the eThekwini Fire Department illustrated that fire response teams are often hampered by poor knowledge of the location of fire hydrants; that many hydrants are poorly protected and inaccessible by emergency teams, (cars parking around them so that an emergency vehicle would not have access), or the access valve is blocked/covered over/hidden.

In Havelock the key hydrant did not have any water pressure when the fire fighting team arrived. An official had to be dispatched to find the upstream valve and open it before it could be of use. For fire fighting to be effective, the Departments of Water and Sanitation and Fire and Emergency Response must work together to ensure that hydrants are checked for accessibility, pressure and functionality. They may be mechanically functional but without water pressure they can't be used.

It is therefore imperative the residents of informal settlements are equipped with knowledge and tools to prevent and reduce the consequences of fires. Governance for informal settlements requires integration and support from multiple actors. In addressing the exposure to fires, and empowering community's mitigation and adaptation processes. IL activated the inclusion of the private sector through a partnership supported by civil society. While the primary objective is minimizing fire risks, this venture is a pathway into better state-citizens relations.

Progress

One of the key factors identified in our discussions with communities and emergency services is the lead in time that it takes, from the commencement of the fire to the arrival of the firefighting trucks and equipment. The time it takes to find the correct emergency telephone number, report the incident and identify the correct location of the settlement to the operator, leads to the uncontrolled expansion and devastation of the fire. To mitigate this position there would ideally be an early response from the local community fire marshal and the fire team. This response may vary from simple sand buckets, water buckets or fire extinguishers to fire fighting with fire hoses linked to a pressurised water supply.

As part of the Incremental service provision to these settlements the iQhaza Lethu team has therefore engaged water and sanitation engineers to design higher pressure water networks with sufficient internal fire hydrants that allows both access and sufficient pressure to fight fires within these settlements. A further potential response that the team is currently discussing with the city, would be to enable community fire teams to access fire hoses that can be attached to the both the existing and planned hydrants, although initial reaction from Emergency Services to this suggestion has not been positive.

While the private sector is often found missing in the developmental space, iQhaza Lethu has been influential in collaborating with FTS Safety Group, specialists in safety solutions. Accordingly, through their SPARC fire prevention program which provides practical training and resources to prevent fires, and have a team of first respondents (community based safety officers) within the informal settlement. The program accommodates 10 community safety officers per settlement that receive NQF 3 Fire Prevention Level 1 Certification and Accreditation, and fire prevention equipment. A few success cases for the program have already been recorded, for example, the Quarry Road informal settlement fire marshals prevented the spread of fire, which could have been catastrophic, through implementing their training knowledge.

While this contribution from the private sector is most welcome and has empowered these residents to immediately respond to incidents, the city will also need to invest in infrastructure to support emergency response. This includes improving access through widening roads and footpaths to allow for fire trucks to access the settlement, the installation of additional fire hydrants at strategic points, and the maintenance of local fire equipment. The initial success achieved through the provision fire prevention equipment, primarily fire extinguishers, should be maintained as subsequent fires in settlements were not effectively contained as many, if not all of the locally supplied fire extinguishers were now empty.

A draft fire plan has been develop and circulated to the various relevant line departments (such as Emergency Services, Fire, EWS, Disaster etc.) for comment and a site visit was

conducted in December with these departments to commence the process and decide on some of the critical components to the suggested Settlement Fire Plans.

Site visits undertaken with the eThekwini Fire Department in December to Parkington and Havelock have focused these efforts to assist communities to deal with the fire issue. These initial visits and communications planned to bring a range of eThekwini line departments together to develop a coordinated and integrated approach to fires in informal settlements, however while initial attendance of Line Departments at the site visits was not good, responses via email have been positive.

The visible portion of the fire plan will be a laminated poster openly displayed in each settlement with the critical contact telephone numbers, access, evacuation and assembly points as well as the location of each hydrant. Fire marshals could also keep a register of all the key hydrants and a record of maintenance services performed on each.
This platform is proving useful not only for responding to emerging fires, but critical in extending informal settlement developmental plans to include fire safety aspects. This is a result of an integrated governance process and improved state-citizen relations for safer sustainable communities.

Learnings

1. Limited access and exposed wires significantly limits the fire departments ability to fight a fire in an informal settlement.
2. Fire hydrants are not always accessible or fully functional and need to be regularly maintained by EWS.
3. Communities are aware of additional fire hydrants that the fire and emergency services teams are not aware of.
4. The Fire department would like to have a designated local community fire marshal, with a reflective vest.
5. A local fire plan for each settlement with the location of each hydrant, clear access and a record of EWS maintenance, contact numbers would be welcomed by emergency services.

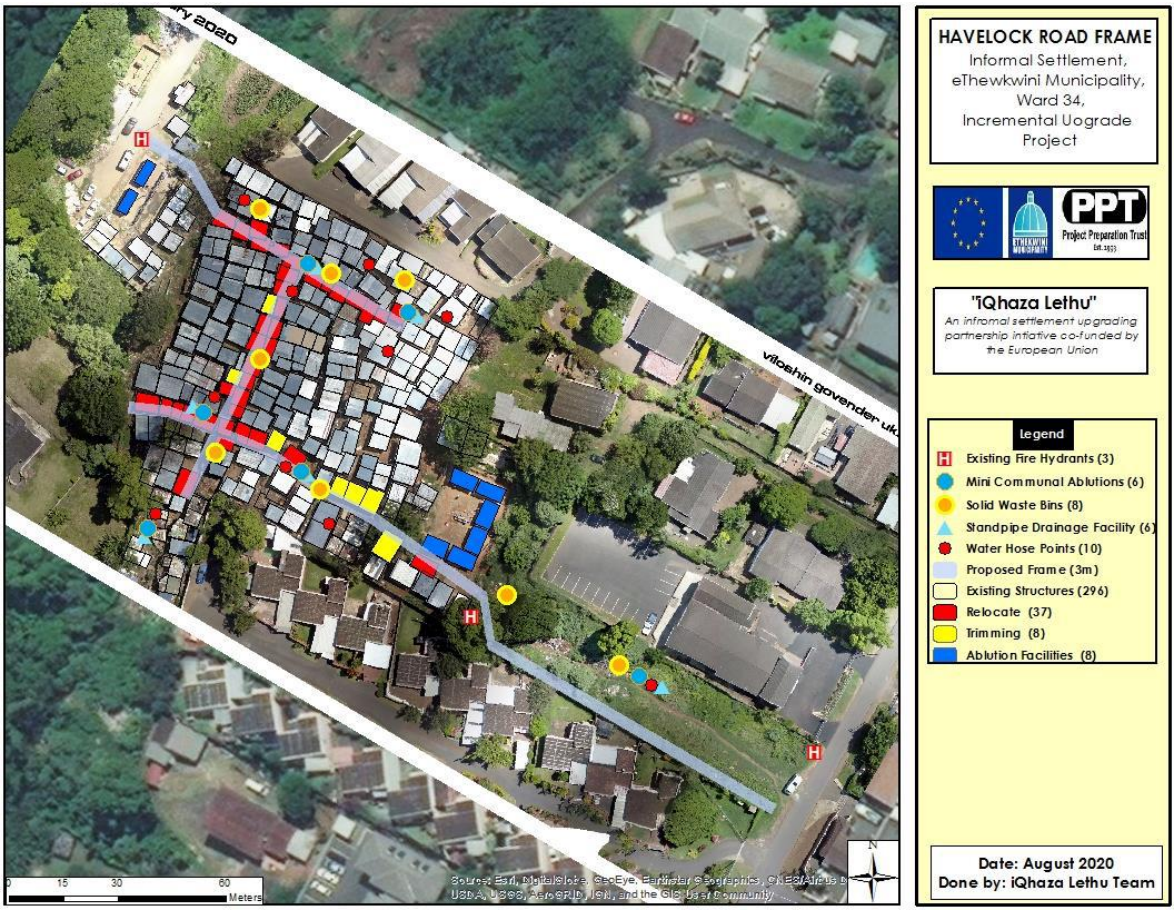
Way forward

1. Site visits to the remaining 8 settlements.
2. Development of 10 fire plans one for each settlement
3. Identify the location of each fire hydrant
4. Determine access to each fire hydrant and its valve, ensure this is demarcated, protected and accessible.
5. EWS to check pressure at each hydrant and that the valve is accessible.[1]
6. Training and information to community to assist in reducing the occurrences of fire and supporting the fire department when in an emergency.
7. A recognisable local fire marshal from the community with a reflective vest on, who has knowledge of the area would be a great assistance during the emergency.
8. Correct phone number is critical (031) 3610000 and should be clearly displayed in each settlement.
9. A local fire team would be able to limit or even stop a fire if they have the correct equipment such as full fire hydrants, fire blankets?. Even a row of water buckets has been effectively used in the past, sand buckets etc. We will need to provide a small O&M budget to fill portable hydrants and possibly buy fire blankets, training etc.

[1] *In some cases there were no valves visible or were obstructed by vehicles etc. this is what caused the pandemonium at Parkington as they couldn't access the hydrants had to use the water carries (3000Lt or 5-10 min of limited firefighting)*

A requests was made for the old type Emergency plumbing team that can be called out in fire and other emergencies to redirect water where and when it is urgently required, EWS used to have an internal team that would be available 24/7 and deal with issues promptly, but no longer.

Photographs and plans



Havelock incremental service concept plan showing potential location of firehose point within the settlement to improve emergency response

The Community based-planner and a community leader from Havelock discussing potential rebuilding strategy post devastating fire

eThekwini Emergency Services personnel showing inaccessible fire hydrant in Parkington which renders fire fighters inefficient in adequately dealing with informal settlement fires.

Extent of Parkington informal settlement fire which displaced more than 56 households in December 2018

Community based planner in consultation with Havelock leadership on potential re-blocking post 2019 devastating fire

Extent of Havelock fire in December 2019 that burnt over 95 percent of the settlement displacing hundreds of households

Havelock community queuing to receive relief support from various ward based stakeholders including gift of the givers as facilitated by the Ward 34 Councillor

eThekwini Municipality relief building materials delivered for Havelock community to rebuild

structures lost in the 2019 fire disaster

Community members from Parkington receiving fire training certificates and basic firefighting equipment from FTS Safety Group

Community members from Palmiet received fire training and basic firefighting equipment from FTS Safety Group

Additional notes from site visits held in December 2020 with IL team and eThekwini Fire officials

- *High pressure hydrants are already available in most settlements these provide the firefighters with the required water, when they fight fires they don't need to get the fire-engine right next to it but do need to be able to roll a 30 + 30 + … pipe down to access the water. None of these pipes have been accessed illegally. Many informal settlement fires are fought with tanker water only usually only 3000lt (up to 8000lt) as these local hydrants are often inaccessible?*
- *Giving the firefighters water at pressure and or access to water they can pressurise with the fire-engine or portable pump is the best way to fight fires in INF. If the hydrant **has at least 5 Bar** the firefighters can fight the fire directly from that location without the engine boosting the pressure. So a pressurised hydrant that has limited access for a fire engine can still be used to fight a fire if there is sufficient pressure to connect the pipe directly.*
- *The officials from fire did not support the idea of providing the community with access to a fire hose, hydrant spanner and valve opener.*
- *However the positioning of pressurised hydrants close by or even in settlements was supported, as these are already in most settlements. We saw no Illegal connections of water and the fire official said that as the pressure is so high communities can't actually tap into the pipe as the pressure then just gushes out and can't be controlled.*
- *During the fire the community are in the process of removing all their family, furniture, fridges and valuables at the peak of the fire, as they remove these items on the evacuation routes the fire team can't roll out their hoses and often get blocked in clogged up access ways. The idea of an evacuation route will have to be discussed more as fire officials said that during a fire if they have loads of people coming out of routes with their items they can't access the fire. It may have to be a real time decision so the community evacuated in the opposite direction of the fire fighters if at all possible?*
- *Illegal electrical connection often knocked over by firefighting ladders and fall on to floor electrocuting firefighters and communities.*
- *It's not so much the structure (mainly wood and corrugated iron) that burns it mainly the family's items inside the house, such as the beds and couches etc.*
- *The idea of a fire blanket that can be thrown over the initial fire was suggested and may be a solution we can test.*
- *A 63mm hose is usually connected to the hydrant and this can be subdivided in to smaller sections of 38mm, each connection, will however reduce the outlet pressure.*