

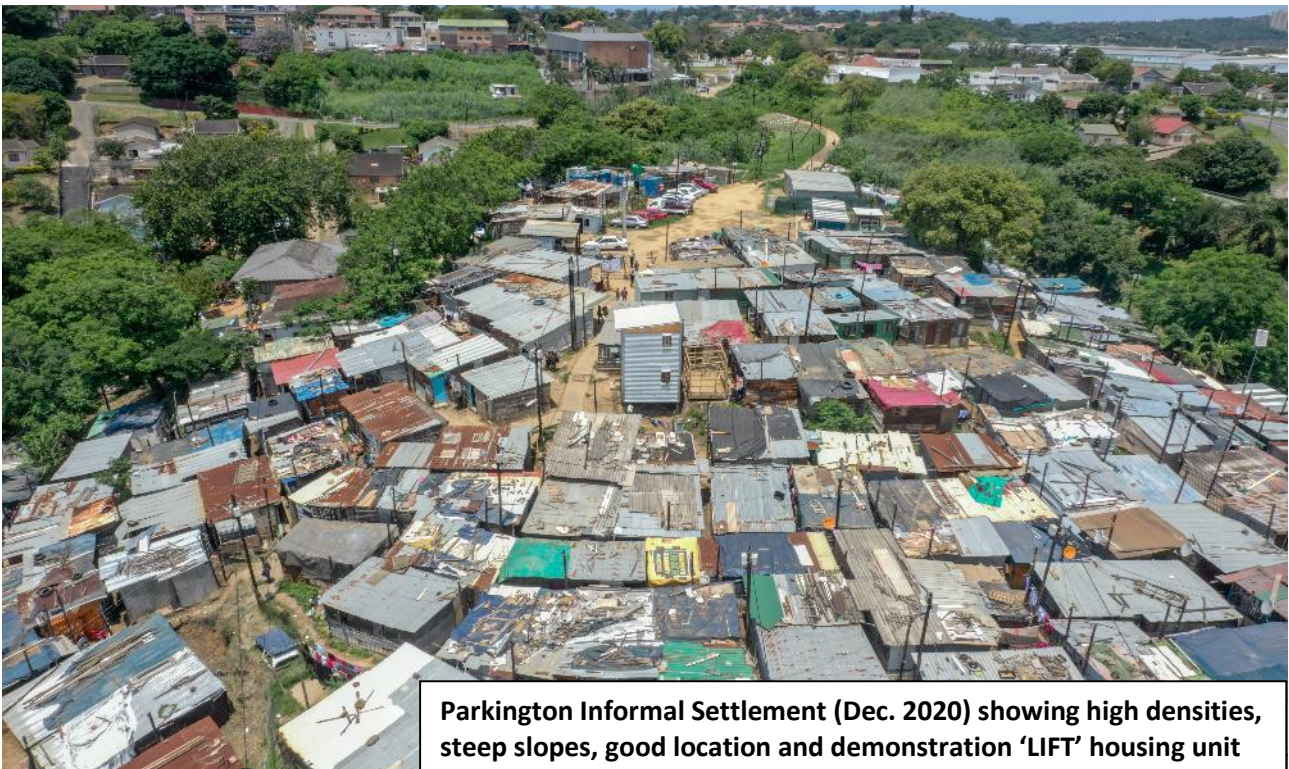


**“iQhaza Lethu”**  
*An informal settlement upgrading partnership  
initiative co-funded by the European Union*

## **Servicing dense, well-located informal settlements and utilising alternative housing typologies - an optimised upgrading approach (Feb. 2021)**

### **The need for a new and optimised servicing approach**

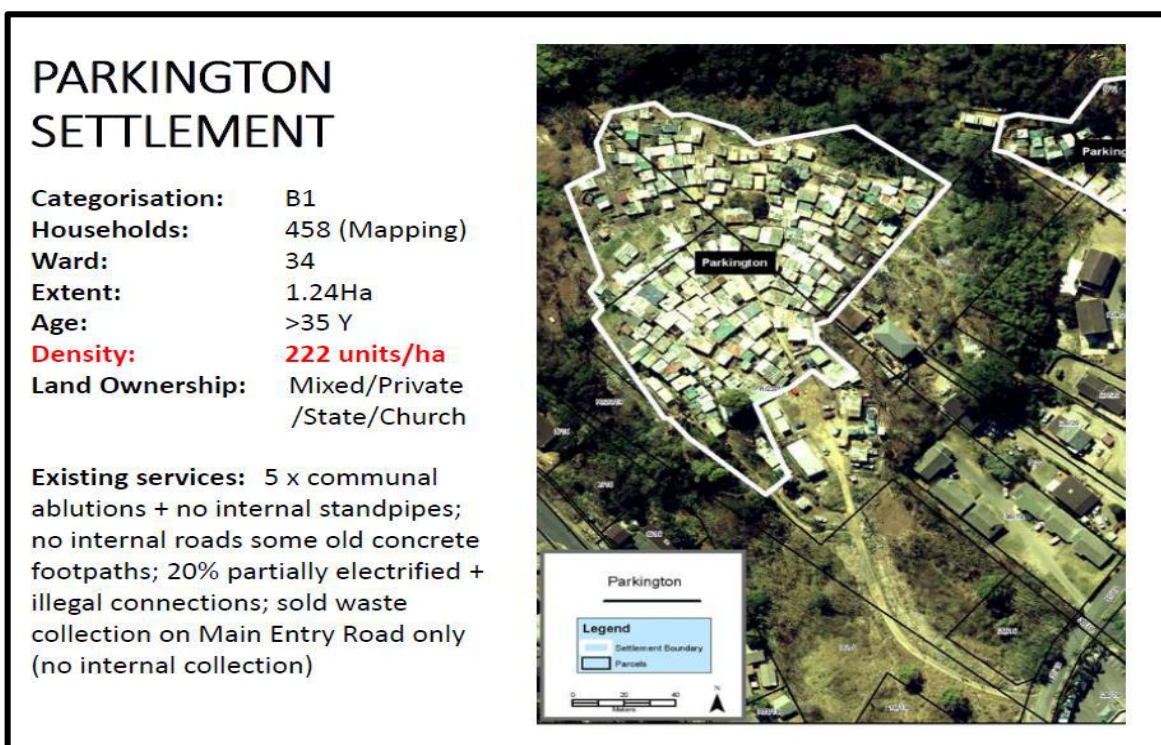
A new approach for more effectively servicing dense, well-located informal settlements was collaboratively developed by iQhaza Lethu in 2019/20. There are large numbers of these settlements in the eThekweni Metro which have been designated as permanent and suitable for in-situ upgrading over time (i.e. category B1 settlements). They are often in prime locations and typically have good access to social facilities and employment opportunities. Most are well-established, often dating back more than 20 years. These settlements constitute almost half of all the informal settlements in the City (135,275 households in 218 settlements out of a total of 580 settlements and 285,000 households). However, the high densities and steep land characteristic of these settlements makes them difficult to service and upgrade. There is little or no space to establish services inside the settlements which typically face high levels of vulnerabilities relating to fire, disease, overcrowding, uncontrolled solid waste and squalid living conditions. Conventional upgrading in these settlements (through housing provision and formalisation) is not possible due to such factors as their high densities, the presence of non-qualifiers, a lack of alternative land, steep slopes, challenging geotechnical conditions, and insufficient budget. These strategically-important settlements have therefore been developmentally ‘locked’ with no further improvements possible.

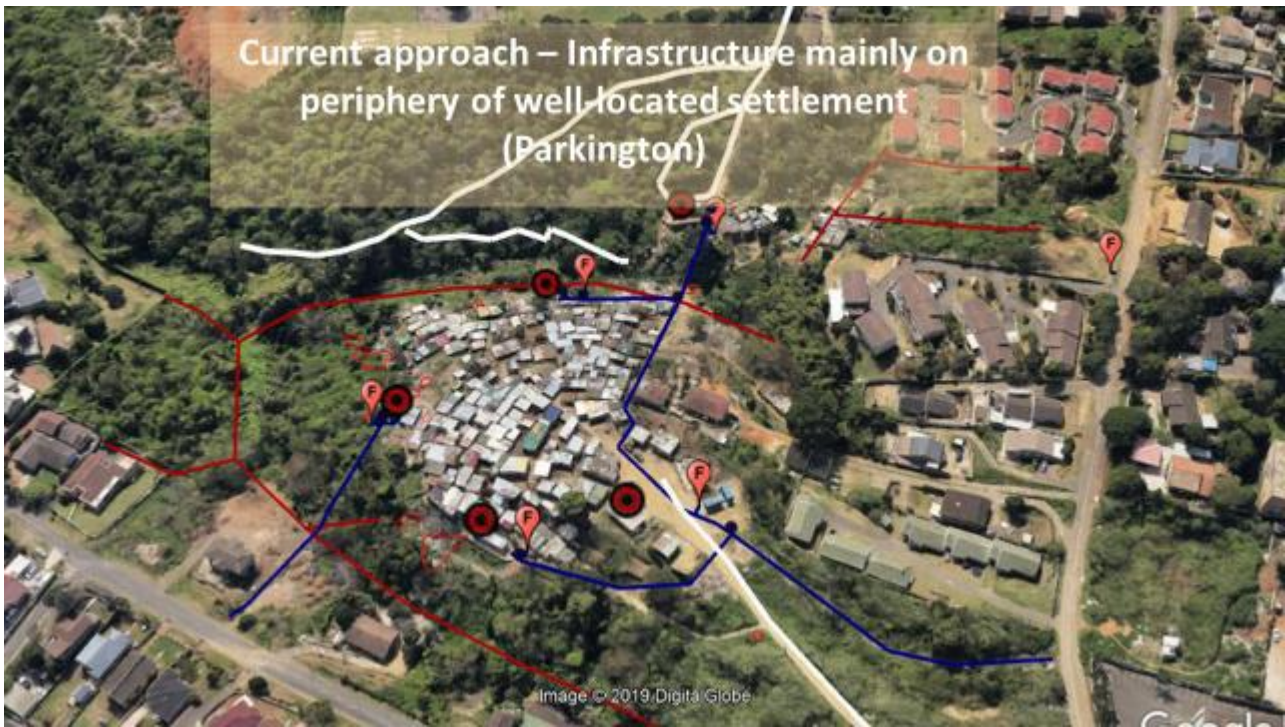


## Problems with the historical approach

Historically, basic services were provided by eThekweni Municipality to informal settlements as an interim or temporary solution. The servicing was generally undertaken in a rapid, reactive and non-integrated, fashion. Most of the shared services (such as water, sanitation, solid waste and fire hose points) were thus provided at the periphery of the settlements which meant limited access to residents. Although the Municipality was highly progressive and developmental in introducing its ground-breaking 'Interim Services Programme' in 2010, there was little or no systematic reworking of space. The initial thinking was that the services would be temporary (interim) in nature and that the provision of formal housing and formalisation would be the eventual solution. However, this is now recognised at both Metro and National levels, as being impossible due to acute funding, land, bulk services and other constraints. Conventional upgrading in these settlements (through housing provision and formalisation) is not therefore not possible due to the various factors previously indicated. The Municipality has also historically been hesitant to introduce services (especially water and sewer pipes) inside settlements due to a fear of uncontrolled illegal connections.

A different approach and theory of change is thus required for these strategically-important settlements and there is growing acceptance that such settlements will remain 'developmentally locked' unless the land is utilised more efficiently, optimised services provided and a better platform thereby established for residents to improve their own housing over time. There are also additional environmental and other indirect costs of not improving the services within settlements (e.g. pollution of rivers and streams and blocking of municipal storm-water systems with unmanaged solid waste etc.). These additional risks may outweigh the concerns over illegal connections, which can potentially be better managed by means of stronger social processes and more effective locally-managed and locally-accountable operating and maintenance solutions. In addition, the costs of interim services, both from a capital and maintenance point of view, have increased significantly over time to the point where they are no longer regarded as fiscally sustainable in their current form. It is broadly recognised that more permanent and sustainable solutions need to be found.





## Establishing a Services Frame

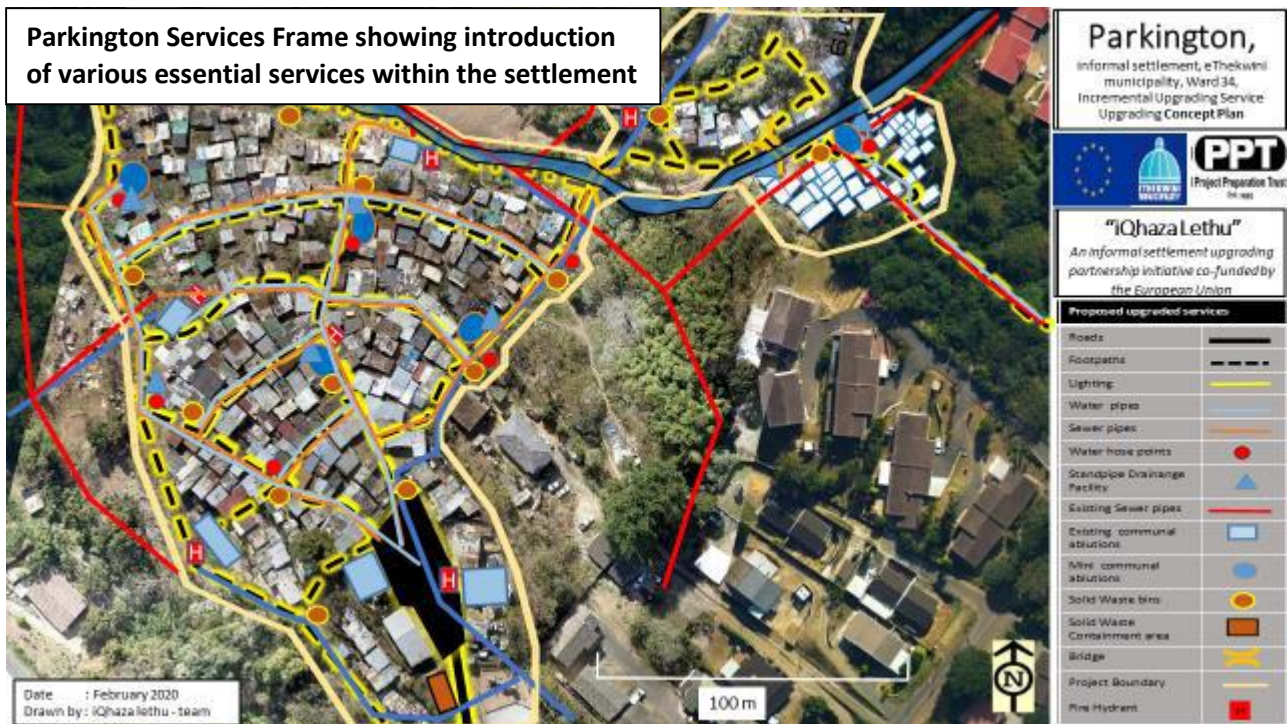
The new 'services frame' approach establishes service access ways inside the settlement which not only improves the proximity of essential services to residents but, importantly, also establishes a more functional urban form for the future. This services frame breaks the settlement up into more manageable 'blocks' and brings essential services into the settlement so they are more accessible, instead of being located largely at the edges. The approach has been the subject of extensive engagement and negotiation with Municipal Line-Departments and communities and is now gaining substantial acceptance as a necessary and optimised way of servicing these settlements. It is currently being piloted on four IL pilot projects (Parkington, Havelock, Ezimbeleni and Bhambayi Phase 3).

Typical services provided on the frame include: footpaths, storm-water controls, mini-communal ablutions, fire hose points, standpipe wash facilities, electricity, and solid waste containment bins. All services, except electricity, are initially communal. However, there is the potential for future individual water and sewer connections once sewer and water pipes are accessible and as owner-driven consolidation (improvement) of housing occurs, incremental planning arrangements are implemented and incremental forms of individual tenure are established. Informal structures are electrified once the services frame is established.

The services frame approach can potentially resolve many of the problems associated with well-located category B1 settlements, thereby unlocking a strategic opportunity for more inclusive city-building and laying the platform for a different and improved urban form in the future. Limited re-blocking, relocations and reworking of space is sufficient to establish the services frame (compared to conventional, formal upgrading where large scale relocations typically occur). Consolidation of intra -blocks can occur as a later phase along with owner-driven housing improvements and possible individual connections to water and sewers. The use of the alternative, lightweight, double story



housing typologies, such as those being piloted by iQhaza Lethu, plays an important role in releasing the space needed for the services whilst at the same time enabling more functional owner-driven housing consolidation over time.

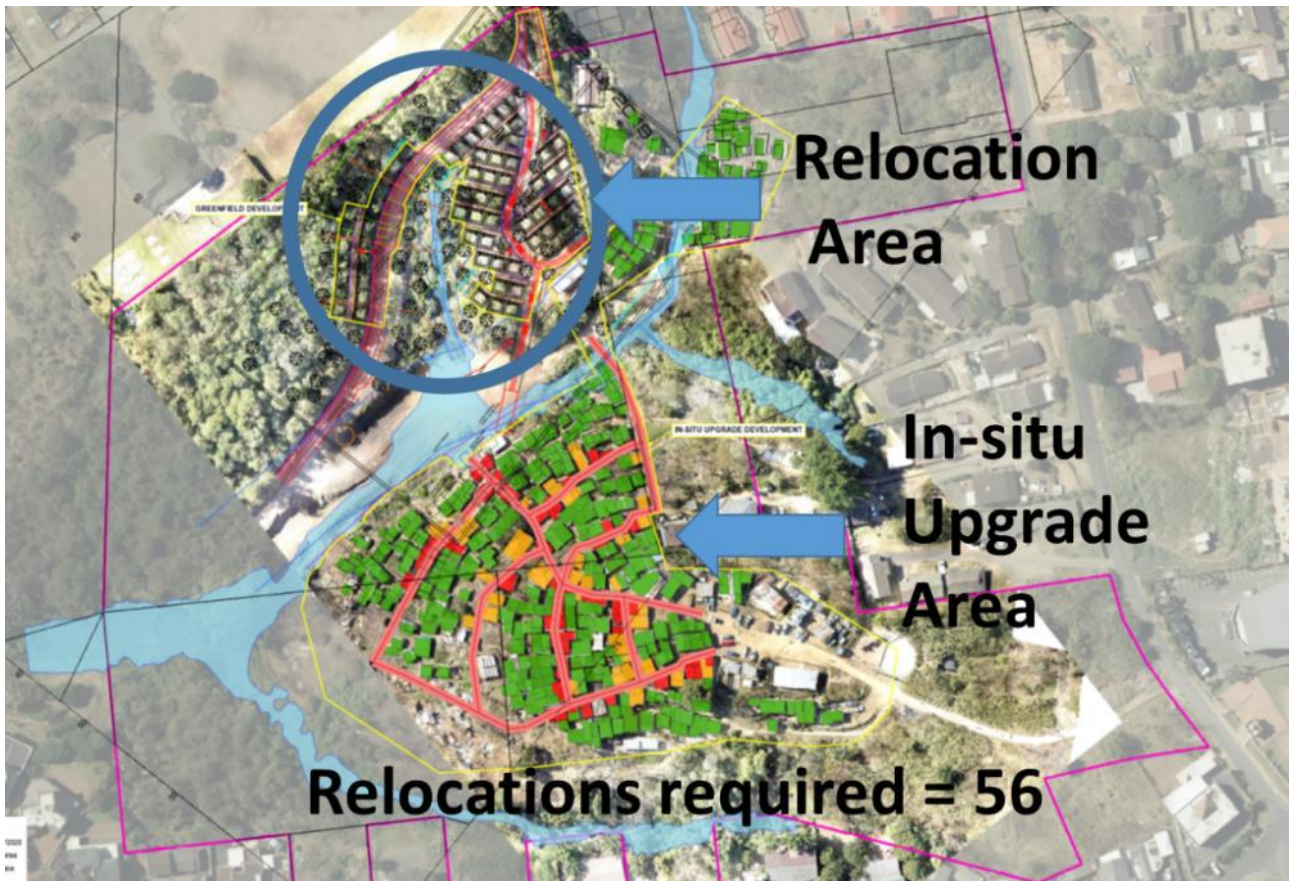


## Partial re-blocking and relocations

In order to establish a services frame, a certain number of households typically need to be relocated or moved. This is known as partial re-blocking and releases sufficient space to enable the establishment of the services frame along key alignments within the settlement. Some of the affected households can usually be accommodated by re-aligning a structure or by moving it to another piece of vacant land within the settlement, but in most settlements, due to the high densities and limited space, some households also need to be moved to alternative land. When this is necessary, relocation to adjacent land (as is occurring in the three iQhaza Lethu relocation pilot projects) is by far the best solution, rather than moving households to other localities which results in significant disruptions to livelihoods and social networks

## Services frame and relocation pilot project sites

Three project sites were identified in 2019 for piloting the services frame approach at Parkington, Havelock and Ezimbeleni settlements. These settlements are all well-located and dense and improved services cannot be provided without partial 're-blocking' and the relocation of small numbers of households. Adjacent relocation sites were therefore identified and planned for each of the settlements in 2020. The construction of services and 157 alternative typology units on these three relocation sites will occur during 2021 and the construction of the three services frames on the adjacent settlements will occur during 2021 and 2022 thereby providing improved sanitation, solid waste management, fire controls, footpath access and electricity for the entire communities. All required environmental assessments, approvals and exemptions for the three relocation sites have been obtained and the land is already owned by the Municipality. Extensive engagement between the iQhaza Lethu / PPT team and various Metro service delivery line departments has occurred including those dealing with roads and footpaths, water and sanitation, solid waste and electricity.



The three relocation sites are on the national list of Covid-19 priority projects (having received special priority because of the drive during 2020 to de-densify certain settlements and open up space for services such as water and sanitation). It is however emphasised that the rationale for these three relocation sites predated Covid-19 and arose from the need for partial ‘re-blocking’ and a limited number of relocations in order to open up space for improved services.

### **National priority of the three relocation sites and policy feedback**

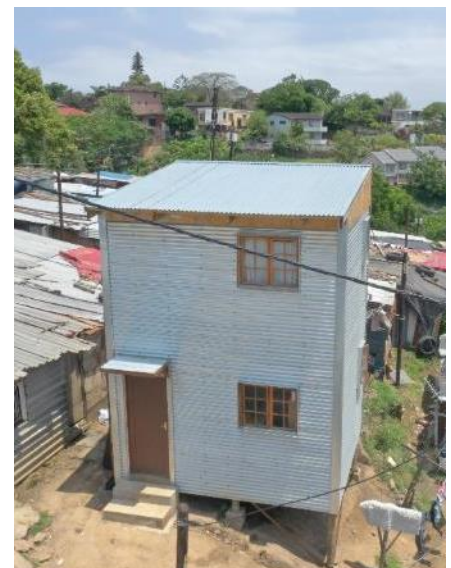
The inclusion of the three relocation pilots on the national Covid-19 informal settlement de-densification priority list in 2020 has afforded an opportunity to share important learning with the National Department of Human Settlements (NDHS) regarding a different and more appropriate approach to de-densification by means of partial re-blocking in order to enable optimised services establishment in accordance with UISP principles (i.e. incremental, in-situ upgrading with minimal relocations). The associated new housing typology has also been received with interest by the NDHS as an innovative solution which enables more efficient space utilisation which importantly provides residents of informal settlements with an alternative way of building their own housing in the future, using better methods but with familiar materials which readily available at local hardware stores and lightweight (and thus easy to carry into areas without vehicular access). There is a realisation that relocations sites are seldom temporary but instead typically become permanent settlements. The three iQhaza Lethu relocation sites have been designed with the long-term in mind with the housing unit and services being of a good standard, capable of future consolation and improvement. There is the potential for all three sites to be transitioned to permanent status once incremental planning arrangements are in place at which time incremental tenure solutions can also be implemented.

## Alternative 'LIFT' House Typology

An innovative lightweight, low-cost, double-story housing typology was successfully developed by iQhaza Lethu and a team of architects and engineers working in collaboration with the Human Sciences Research Council (HSRC) in 2019/2020. DesigncoLab was the appointed architectural service provider. The unit type has been termed the 'LIFT' House type (this being the acronym for **L**ight-weight, **I**mproved, **F**ire-safe, **T**imber-frame) or 'Indlu-lamithi' in isiZulu (meaning 'the wood frame house which stands tall' and also the word for a giraffe). The house is compliant in all material respects with the building standards for a timber frame structure (SANs code 10082), is engineer-certified, and has been certified as safe from a fire safety point of view by an independent fire specialist.



Demonstration unit and pilot rollout: A successful demonstration LIFT unit was built at Parkington settlement in 2020. It was well received by the owner and other residents. The beneficiary, Mrs Lovina Khasa, was born in 1963 and has been a resident in Parkington for more than 30 years since 1990. Refinements to the design were subsequently made based on multi-stakeholder feedback. 157 of the houses (of various sizes) will be built on the Parkington, Havelock and Ezimbeleni relocation sites in 2021 in order to open up space for essential services frames in the adjacent informal settlements.



Design solution for steep sites to unlock scarce, well-located land: The LIFT house typology is a response to the need for an appropriate building solution for steep, densely-populated and well-located informal settlements in order to optimise scarce land, open up space for services and to enable residents to improve their own housing over time. The foundations and weight of conventional housing render it unviable on these sites because it will typically destabilise the steep slopes and will make poor use of the limited land available (unless unaffordable multi-story units with costly foundations are utilised). By contrast, these lightweight, low-cost units with micro-pile foundations do not require excavations, cut and fill or retaining walls and can function safely with minimal disturbance to the site. The units are thus specially designed to unlock well-located land which is otherwise undevelopable and extensive collaborative work has been undertaken over a period of more than a year to ensure that they fulfil this function in an appropriate and cost-effective fashion.



Key design features of LIFT units: Indlu-lamithi houses consist of: a treated, sawn-timber frame with extensive bracing making the units rigid and stable in severe weather events; micro-pile foundations which minimise site disturbance; suspended timber floors; galvanised metal exterior cladding and gypsum board internal

cladding with mineral wool insulation in-between; with internal timber stairs. The 157 units to be built on the three pilot relocation sites will make use of communal ablutions provided by the Municipality, but the units can all be modified later to include an inside toilet and hand-basin when and if water and sewer pipes become accessible. The design of the units enables a more functional alternative urban form on eThekweni's typically steep sites, including in respect of improved space utilisation, physical distancing and health and safety.

Design refinements and types of units: The demonstration LIFT unit at Parkington has been visited by municipal building inspectors, the Housing Development Agency and NHBC amongst other stakeholders (in addition to the inputs provided by two fire specialists and professional team). Feedback received has resulted in various refinements to the design. Detailed designs for five sub-types of the typology have been finalised ranging from single story 15m<sup>2</sup> unit (mainly for single person households and which can be later extended upwards by adding a second floor) to a 45m<sup>2</sup> double story unit (refer to summary table on following page).

Permanent housing quality: Indlu-lamithi housing units are designed to be suitable as a permanent housing solution and are of a high standard. Even though the units on the three pilot relocation sites will be delivered as part of an emergency housing response a transition to a permanent status is envisaged once eThekweni's incremental planning protocols are finalised and incremental planning and tenure arrangements have been implemented for the three relocation sites. As noted previously, the houses conform with SANs code 10082, are engineer-certified and their design has been informed inputs from two independent fire specialists and have been certified as fire-safe.



Demonstration LIFT / 'Indlu-lamithi' house at Parkington Informal Settlement Dec. 2020

A localised, labour-intensive housing solution: Indlu-lamithi houses are 'low-tech' and utilise materials which are readily available at local hardware stores. The materials and building methods are generally familiar to residents and local builders making it easier for the units to be replicated in the future by local residents as

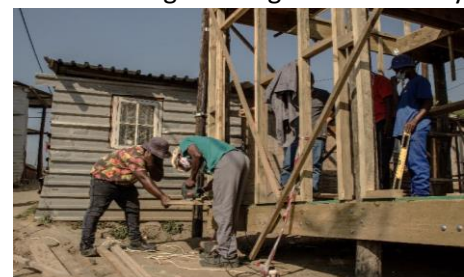
they improve their own housing over time. The units are labour intensive, thus creating significant local employment. It is hoped that the new building system (technology) will become embedded within local communities over time and result in improved building practices in future, including the construction of double-story houses which are safe and more space-efficient.

Cost of units: The base cost of the 31m<sup>2</sup> LIFT double-storey house is approximately R102,158, at a per-square-meter cost of R3,323 (for materials and labour). The costs of other unit sub-types are contained in the table below. These are based on detailed bills of quantity (BOQs) by a Quantity Surveyor in 2021. Tender prices will be available within three-months' time. The cost of delivering the units in a project environment will vary depending on such factors as the number of units being built, local topographic and geotechnical conditions, site establishment and materials management factors, transport costs, and relocation costs where applicable. These additional costs are typically covered under P&Gs and contingencies on the project budget. The cost of informal settlement residents building their own Indlu-lamithi housing using local builders is expected to be significantly cheaper than this due to savings on labour costs.

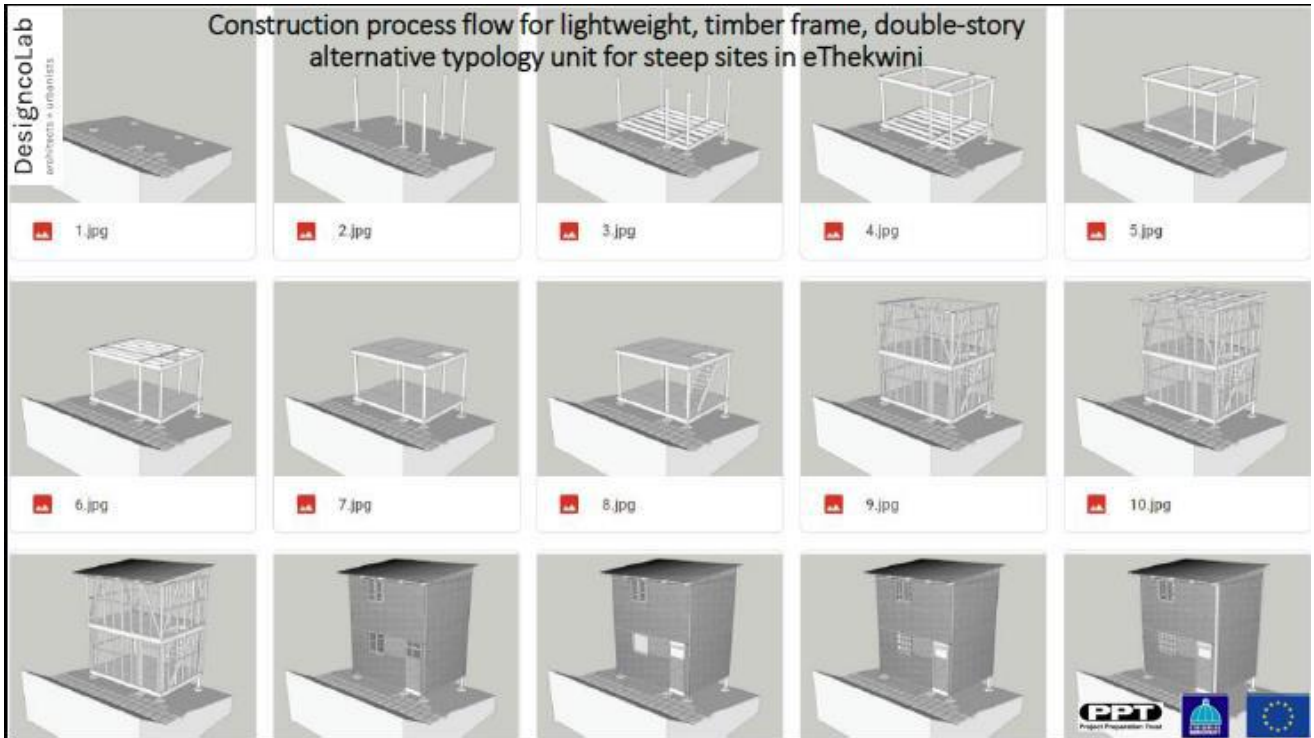
Sub-type	Unit cost (materials + labour, excl. VAT)	Enclosed floor area (m <sup>2</sup> )	Footprint area (m <sup>2</sup> )	Cost per (m <sup>2</sup> )	Required site area (m <sup>2</sup> )
Intermediate single storey, 15m <sup>2</sup> <i>(for single person households, extendable upwards)</i>	55 796	15,4	15,4	3 630	30,70
Intermediate double storey -internal stair 31m <sup>2</sup>	102 158	30,7	15,4	3 323	30,70
Medium double storey – internal stair 34m <sup>2</sup>	106 340	34,4	17,9	3 091	34,52
Large double storey - internal stair 45m <sup>2</sup>	123 153	44,6	22,3	2 761	41,12

Value of units: The principal value of the LIFT house type lies in its ability to unlock the more productive use of scarce, well-located land which cannot be developed using conventional low-cost housing methods. They thus enable significant 'land value capture' through releasing the necessary space in settlements (via partial 're-blocking') to enable the establishment of a services frame which establishes an improved and more functional urban form for the future. The significant use of timber in the construction (which is a renewable resource) and the high labour content and job creation potential, are added benefits.

Cost-efficiency: Care has been taken to ensure the Indlu-lamithi house type is as cost-efficient as possible whilst still being safe on steep and geotechnically-challenging terrain and meeting building and fire safety standards. A wide range of different materials, building systems and construction methods were considered in the research phase before the lightweight, timber-frame system was selected. Although the units cost a similar amount per square meter relative to conventional low income housing, it is emphasised that such housing is not a viable alternative on the afore-mentioned challenging sites.













**Inside of the demonstration LIFT / 'Indlu-lamithi' house before and after occupation by Mrs Lovina Khasa (57 years). She has resided in Parkington for more than 30 years (since 1990). She is a grandmother and has not received an 'RDP' house.**

## Incremental planning and tenure arrangements

The optimised servicing approach needs to go hand-in-hand with appropriate incremental planning and tenure arrangements which: (i) include informal settlements within the City's planning frameworks (as required by the Spatial Management Land Use Act - SPLUMA); (ii) establish clear planning trajectories and tenure security; and (iii) unlock the potential for residents to start investing in their own housing. Informal settlement areas currently fall outside of all planning and regulatory frameworks since the underlying land is not yet proclaimed, subdivided and in many cases is also not yet owned by government (almost half of the land in informal settlements in eThekweni is still privately owned). iQhaza Lethu has therefore supported the development of innovative and ground-breaking solutions. A comprehensive Incremental Planning Policy has been developed for eThekweni Municipality. It is now in final draft form having received inputs from all relevant City line departments. This is the first time in South Africa, a Metropolitan Municipality has a draft framework of this kind in place. The Policy addresses all aspects of incremental upgrading and overcomes a range of barriers in order to unlock a more effective, city-wide upgrading approach. The intention is to test and pilot the new framework in certain of the iQhaza Lethu pilot settlements such as Parkington, Havelock and Ezimbeleni. Amongst other things, the settlements will be recognised and reflected as per their categorisation in the Municipality's Spatial Development Framework, incremental development areas (IDAs) will be established, and residents will receive functional tenure security. Initially this will consist of administrative recognition linked to a list of all residents, however the possibility of individual incremental tenure in the form of municipal certificates of occupation will also be explored.

## Budget allocations for implementation of pilot projects

More than R128million has been approved for the implementation of the ten iQhaza Lethu projects over the next two years, which include the three pilot projects with integrated services frames noted previously.

Settlement	Ward	House-holds	Extent (ha)	Total Costs by type of service (R millions)							Totals budget approved
				Roads, footpaths, SW	Water & Sanitation	Flood control	Solid waste	Electricity	Fire	Relocation housing	
Parkington Relocation	34	60	1,97	4,28	0,78		0,09	0,56	0,32	6,88	12,91
Parkington Frame	34	367	4,28	4,59	2,15		0,34	1,38	0,05	0,00	8,51
Parkington (ISU+reloc)	34	427	6,25	8,87	2,93		0,43	1,94	0,37	6,88	21,41
Havelock Relocation	34	65	0,01	1,23	0,33		0,11	0,42	0,03	4,97	7,10
Havelock Frame	34	205	0,50	0,60	1,56		0,16	3,00	0,04	0,00	5,36
Havelock (ISU+reloc)	34	270	0,51	1,83	1,89		0,27	3,43	0,07	4,97	12,46
Ezimbeleni Relocation	22	30	0,29	1,32	1,29		0,15	0,28	0,01	2,56	5,62
Ezimbeleni Frame	22	620	6,10	3,61	2,58		0,19	7,58	0,07	0,00	14,03
Ezimbeleni (ISU+reloc)	22	650	6,39	4,94	3,87		0,34	7,86	0,08	2,56	19,65
Bhambayi Ph3	57/54	1 500	36,20	10,52	10,92		0,72	3,82	0,22	1,90	28,11
Dakota Beach	90	1 155	6,24	2,23	1,25		0,37	0,00	0,05	0,00	3,90
Progress Place	72	600	4,00	1,69	3,48		0,22	6,52	0,07	0,95	12,93
Quarry Road West	23	1 169	3,50	2,38	0,25	0,50	0,26	0,20	0,04	0,00	3,63
Uganda ( Umlazi)	90	1 413	12,23	3,28	1,08		0,35	2,50	0,03	0,00	7,24
Hololo City	45	406	14,30	3,59	0,57		0,26	3,90	0,01	0,48	8,80
Palmiet	23	1 200	6,10	3,52	1,18		0,35	5,25	0,09	0,00	10,39
		<b>8 790</b>	<b>95,71</b>	<b>42,84</b>	<b>27,43</b>	<b>0,50</b>	<b>3,58</b>	<b>35,42</b>	<b>1,03</b>	<b>17,74</b>	<b>128,53</b>

## Implications for the future – scaling up and pipeline planning

The optimised servicing approach plays an important role in establishing a more viable and appropriate future pipeline of upgrading projects in the eThekweni Municipality. As a result of the iQhaza Lethu services frame pilot projects, it is now recognised that a differentiated pipeline of upgrading projects is required, with a dedicated pipeline being established for well-located B1 informal settlements for the provision of integrated services and the reworking of space. Whilst there will still be a pipeline focussing on non-integrated basic services provision (to address most critical services deficits in all settlements), the B1 pipeline is regarded as strategic in terms of changing the urban form, optimising scarce-well located land, and laying a platform for a more inclusive city in the future. The use of the alternative housing typology plays an important role in enabling this to occur by releasing the space required to establish services within settlements.

