

Article

Evaluating the Community Land Record System in Monwabisi Park Informal Settlement in the Context of Hybrid Governance and Organisational Culture

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Abstract: The study examined the effectiveness of a community-operated land record system (CRS), a product of an evolutionary information system planning approach under hybrid governance arrangements in Monwabisi Park informal settlement in Cape Town. To structure the analysis, the authors adapted an analytical framework for analysing land registration effectiveness to community records systems. It serves as a tool for analysing, designing and managing similar information systems. The CRS is an element of a participatory planning and development project involving a triad: (a) community-based organisations (CBOs); (b) a non-governmental organisation (NGO), which has acted as a change agent, facilitator and resource provider; and (c) the City of Cape Town. The hybrid governance institutions comprised a set of local community and government protocols. Of further significance are the organisational cultures of the CBOs, and the NGO's information system team differs markedly from that of most land registries. The researchers examined the CRS database and operations management, interviewed key-informants and interviewed shack residents door-to-door. The CRS was effective because residents used it and largely adhered to the associated documented community protocols to defend their tenure and to effect transactions in shacks. Further contributors were the NGO and CBOs continually managed the institutional and leadership dynamics relevant to the CRS, factors often ignored in similar projects.

Keywords: community land records; evolutionary information system design and implementation; participatory planning; organisational culture; hybrid land governance; incremental informal settlement upgrading; land tenure information systems

1. Introduction

The article examines the development and effectiveness of a digital land tenure information system (LTIS) in Monwabisi Park, an informal settlement of some 26,000 residents in Khayelitsha, Cape Town, Western Cape province, South Africa [1]. The Monwabisi Park LTIS is distinctive in that it was developed under hybrid governance arrangements as part of a participatory informal settlement upgrading planning process where resident volunteers operated the information system on site. To structure the data collection and analysis, we applied minor changes to a theoretical framework for evaluating the land tenure information system (LTIS) that the first author has been developing since the 1990s. We applied the adapted framework to evaluating the community-based records in Monwabisi Park. The framework was originally designed for evaluating how landholders use or are predicted to use a conventional LTIS, such as titles or deeds, in complex socio-political situations. The underlying supposition was that an effective registration or certification system is one that landholders

use as part of their primary strategy to defend their land interests and to conduct transactions in those interests, instead of using an alternative set of strategies. The results of an LTIS evaluation based on the framework might set off corrective action to the LTIS design, operations management and the procedures that landholders have to follow when using it. Alternatively, the evaluation might persuade policy makers to change the strategies intended to secure land interests [2–5]. Community-operated record systems offer an alternative strategy to state-operated land title systems. The authors' recent work suggests that the adapted framework is also appropriate for analysing titled land projects where hybrid governance persists after registration [2,5]. However, land titling systems and their effectiveness fall outside the scope of this discussion.

The Monwabisi Park LTIS was known as the Community Records System (CRS), housed in the Community Records Office (CRO) in the informal settlement, where resident volunteers operated it. In deference to the local nomenclature, we use the abbreviations CRS and CRO in the remainder of the document. A CRS, as we define it, comprises the digital data and hard-copy documents, the database, software, the local office where it is housed, the people operating and managing the data and the database and the relevant institutions, protocols and operations management procedures. All of these sub-systems have to be functional in an effective CRS, and they also interact with other sub-systems (some of which are external to the CRS) as portrayed in the analytical framework presented in Section 3 below.

The relevant role players in the Monwabisi Park CRS and informal settlement upgrading process are introduced in Figure 1. The local branch of the South African Civics Association (SANCO), a community-based organisation (CBO), was a powerful political actor and land administrator in the settlement. An NGO, Violence Prevention through Urban Upgrading (VPUU), engaged as a change agent, facilitator and resource provider in applying an incremental approach to the informal settlement upgrade planning which depended heavily on citizen participation. A functioning CRS operated by community volunteers was seen as a critical system in this approach. Consequently, VPUU oversaw the CRS design and implementation and provided ongoing information systems management support. One of VPUU's first concrete actions when it became involved in 2009 was to facilitate the creation of an umbrella CBO, the Safe Node Area Committee (SNAC) that represented most of the CBOs in Monwabisi Park, to steer the development planning [6,7]. VPUU also provided ongoing leadership and organisational development training and the infrastructure for SNAC to succeed (Interview #2005, 2013, 2014). The City of Cape Town (CoCT) is the landowner, and the local planning and administration authority. As part of the hybrid governance partnership arrangements, it enforced a protocol that had been negotiated to stop the further influx of people into the settlement through its Anti-Land Invasion Unit (ALIU) [6,7]. In addition, the police and the Neighbourhood Watch (a resident security patrol), were engaged in a formal, legally recognised, and mutually supportive hybrid governance arrangement (discussed in Section 6.1) that contributed to land tenure security as well as general personal security, both of which fit VPUUs focus on safety (Int #2013, 2014).

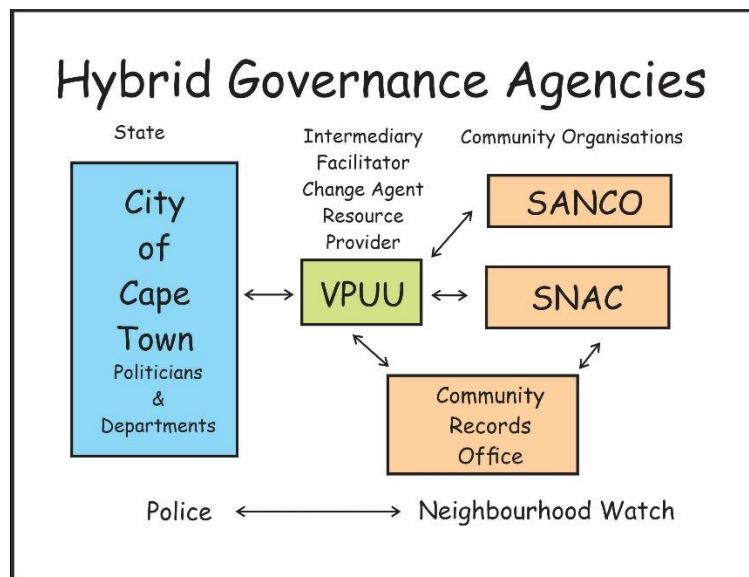


Figure 1. Hybrid Governance Arrangements in Monwabisi Park.

The paper should interest academics and practitioners involved in developing land records in complex, contested situations where top-down information system planning is unlikely to work. Monwabisi Park was chosen as a case study as it is the only informal settlement that the authors have encountered where a digital LTIS operated by community members is functioning as an ongoing concern; i.e., a long-term information system as opposed to a short-term, project-based information system. A key contribution of this study is that all the systems considered critical to the success of a LTIS in complex situations as posited in the evaluation framework (discussed in Section 3) had been addressed through a participatory planning approach. Importantly, this was achieved under hybrid governance arrangements. A further contribution is that the organisational cultures of the different agencies, or sections of those agencies, involved i.e., political and adhocracy culture, differ considerably from the machine culture that typifies many land registries.

1.1. Objectives

An observer might analyse the Monwabisi Park CRS through many disciplinary and philosophical lenses. The study is located at the interstices between information science, political science, economics, spatial and information technology applications, law, urban or community planning, social anthropology, public administration, organisational development and land tenure administration, among others.

Our lens is land tenure information systems in informal settlements, synthesising insights from other disciplines in the process. Our primary interest lies in the adapted framework, which draws on many of the above disciplines, and analysing the Monwabisi CRS using the framework. Hybrid governance, organisational culture, information management theory and citizen empowerment in participatory planning form part of the environment in which the CRS was developed. We briefly review the literature on elements of hybrid governance in informal settlements and organisational culture to the extent they are relevant to implementing an effective CRS in a similar environment to that in Monwabisi Park. However, we do not delve into different theoretical positions related to them. They are part of the context in which the CRS was developed. That said, the article does add to the body of empirical work related to hybrid governance and organisational culture in land tenure information systems design and implementation.

1.2. Problem Context

Community-operated records offer an alternative paradigm to state-managed land titles and certificates of tenure. Monwabisi Park informs this paradigm.

Informal settlements present more than land tenure recording challenges, their major problem from a global perspective being how to improve the living conditions for their residents. Worldwide, an estimated one billion people live in slums [8]. In South Africa, urban poverty is expressed in terms of housing as the major social and political issue. In the Cape Town metropolitan region, there are an estimated 1,199,486 households, of which 261,144 (22%) live in informal structures [9]. In the authors' previous case studies on land tenure administration in towns and cities in the Western Cape, municipal councillors and some senior officials who we interviewed noted that housing is one of the first issues raised at public meetings [2,5,10].

The research interest lies in the global push towards documentation of land rights and alternative systems for doing so to create effective tenure information systems. There are major initiatives worldwide to document the high proportion of land rights that are unregistered, frequently estimated by international organisations to affect more than two thirds of the world's population [11]. There is in general much discussion about using new tools for documenting rights, but little empirical evidence of how to create functioning, durable local records systems and their trajectory once they have been established. There is also little reported on how tenure information systems function in informal settlements under hybrid governance arrangements.

There has been a drive by international organisations such as UN-Habitat, the Global Land Tool Network (GLTN), UN-FAO, the World Bank, USAID and the International Federation of Surveyors (FIG) to document unrecorded rights. In part, this is driven by one of the metrics in Indicator 1.4.2 of Sustainable Development Goals (SDG) Goal 1, to end poverty. The metric measures the proportion of documented land rights in a jurisdiction [12]. The FAO's Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGTs) comprise a set of indicators to measure countries' adherence to a list of rights-oriented goals. The VGGTs are currently a major impetus in Africa for recording off-register rights. The VGGT's Technical Guidelines 9 and 10 provide guidance, respectively, for 'creating a system to record tenure rights and first registration' and 'improving ways to record tenure rights' [13,14].

A number of IT tools have been created to measure and record unregistered rights. Among these are UN-Habitat/GLTN's Social Tenure Domain Model (STDM) standard and accompanying software, USAID's Mobile Applications to Secure Tenure (MAST) and Cadasta [15]. This spate of new tools based on digital technologies for documenting local and national land rights using new forms of evidence, such as 'informal' and customary tenure norms, has added to the growing stress on documentation and simultaneously a move towards ISO standards. An example of standardisation is the descriptive standard ISO 19152:2012 Land Administration Domain Model (LADM)¹. The STDM standard is a specialisation of the LADM.

This push from the UN and other international lobbies has led to an emphasis on documenting tenure rights by creating tenure certificates where land interests are currently unrecorded. An important question that Monwabisi Park and the framework in Section 3 inform relates to sustainability. How can the records be kept up to date and accurate once the certificates have been issued?

¹ ISO 19152:2012 covers basic components of land administration and provides an abstract, conceptual model with four packages related to parties (people and organizations); basic administrative units, rights, responsibilities, and restrictions (ownership rights); spatial units (parcels, and the legal space of buildings and utility networks); spatial sources (surveying), and spatial representations (geometry and topology). ISO creates documents that provide requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose. ISOs can be purchased from the ISO Store or its members including the South African Bureau of Standards (SABS).

There is a risk in driving large-scale certification projects of what academics and land professionals in South Africa label a *deliverology* mentality, where the emphasis is on counts of deliverables rather than the quality of outcomes over time [16]. Certificate counts may meet indicator targets, but the records may soon be out of date. They may fall into disuse due to failure by external agents or communities to maintain them or residents do not consider them to be useful. Hence, the system may be considered ineffective.

In contrast to counts of deliverables, the inquiry that informed this paper was built around the qualitative outcomes, in particular information system usefulness and usage. These are longstanding measures of information systems effectiveness. Effective LTISs are ones that residents actually use to defend their interests and effect transactions, as opposed to using alternative strategies to achieve similar ends [2,17,18]. It is from this perspective that we examined the Monwabisi Park CRS. Do residents use it? If so, why do they use it? What are the critical factors that underlie a functioning CRS where the data are current, accurate and secure and residents use it? Broader questions that require ongoing investigation are how such a system can be replicated and what might be the trajectory of such a system in national and international land tenure information policy and planning. These could not be adequately addressed in a single case study where the CRS had only existed for four years, and in a vacuum in state policy.

1.3. Key Findings

We found the CRS to be effective when measured by community satisfaction and residents' usage of it. Residents use it, and they intend to use it to defend their tenure and to conduct transactions in land. The framework that was adapted for analysing CRS effectiveness proved also to be a useful structure for designing the study and analysing the Monwabisi Park CRS. A sustainable CRS is contingent on ongoing, local-level attention to all the elements (or sub-systems) in the framework described in Section 3 over a number of years, and the hybrid tenure administration arrangements in Monwabisi Park have done that.

One lesson is that satisfaction with the CRS was linked to satisfaction with the overall informal settlement upgrading development. These were not distinct issues in the minds of some Monwabisi Park residents given the significance of gaining occupational legitimacy through developmental initiatives. The CRS was a major driver of the settlement development and local tenure arrangements and was itself driven by these developments and tenure arrangements. When further formal development had ground to a halt, a number of residents were highly frustrated with unfulfilled expectations of settlement upgrading as manifested in the lack of development and housing due to legal and planning obstacles. These residents were less positively disposed to the upgrading initiative and arguably, by association, to the CRS. Nevertheless, they did not suggest any alternative development strategies, alternative record systems or alternative strategies to defend land interests and perform land transactions.

Problem-solving styles among the organisations involved in designing, implementing and managing the CRS in Monwabisi Park were very different to the machine-type organisational culture that often typifies title or deed registries. CBOs, such as SNAC and SANCO, are likely to be characterised by a political organisational culture, while intermediaries such as VPUU are likely to assume an approach that matches an adhocracy culture in developing a CRS when it is part of a participatory planning approach. We limit this latter observation to the CRS development as we did not examine VPUU's organisational culture as a whole. As is to be expected of an adhocracy culture, in the process of developing the CRS, VPUU eschewed existing international standards, such as the STDM, as each design component was negotiated with CBOs using an evolutionary information system development approach according to local priorities.

At the technical and operations management level, the CRS database design and data management system should be easy for local community operators to use. Trade-offs have to be made between the ideal information system functional design that can handle the complex tenure relationships that

characterise informal settlements—where tenure practices may draw on adaptations of statutory tenure administration practices and customary practices—and a simple system design that operators living in the community find easy to use and residents find useful.

Lastly, a CRS offers a different paradigm to the conventional land titling approach of state-managed land tenure information systems, such as a deed, title or tenure certification system. Monwabisi Park's CRS effectiveness provides lessons in implementing an effective information system within this alternative paradigm. It is contingent on a number of factors, and the risk of disruption remains high. It also required an enormous amount of resources by VPUU over a long period of time, and there are questions about its sustainability and the trajectory of such a system among national land tenure recording efforts. It may not be easy to replicate such a system or integrate a number of these systems with a national land tenure information system.

2. Methods

There are three elements to analysing the Monwabisi Park CRS. To set the theoretical context, we first present the analytical framework in Section 3. Following this is a brief review of hybrid governance and informal settlements and then a discussion on organisational culture and community records development. We then present the Monwabisi Park case study and analyse it in terms of these elements using the framework to structure the analysis.

The research method incorporated a detailed examination of both the history and current situation in Monwabisi Park, direct observations when walking around in Monwabisi Park, open-ended and semi-structured interviews and a technical examination of the CRS software. Prior to this study, the first author participated in a study of Monwabisi Park that included 16 key-person interviews in Cape Town and other South African cities with academics, senior VPUU staff, senior City of Cape Town (CoCT) officials in various departments, and land professionals and NGO workers who had been involved in Monwabisi Park [19]. The second author had been involved in managing a workshop on Monwabisi Park involving a similar profile of participants [20].

To develop the historical context, the study examined Monwabisi Park documentary evidence augmented by key-informant interviews and the first study by Schreiber and Barry [19]. We examined the CRS's technical structure and operations management procedures through key-informant interviews, group discussions and software demonstrations.

We adopted an interpretive, constructivist approach to interviews in the field based on the generic inductive qualitative model, i.e., we used existing theory in developing questions and interpreting results, as opposed to a grounded theory approach [21]. We conducted key-person interviews and group sessions with 30 people. These included four VPUU staff, a focus group with CRO operators in Monwabisi Park, a focus group with four SANCO leaders who lived in the settlement and two meetings with SNAC members who represent a number of CBOs in the community. We conducted unstructured and semi-structured door-to-door interviews with 27 households involving 35 residents to examine the strategies they used or might use to transact in land and defend their tenure, among a number of other contextual phenomena.

The interviews involved interpretation of evidence and adaptation of some interview questions as we proceeded. Parts of narratives were categorised according to predetermined themes as per the analytical framework and additional themes that emerged in the study. Interpretation and evaluation of interview material relied on weighting the reported strategies people actually use to secure their land and future rights, as detailed in Section 3.4. Key research themes were explored until saturation was realised. Counts of responses in the door-to-door interviews were categorised into relevant themes where possible. Responses from group sessions, where multiple responses relating to a particular theme are possible, and explanatory details of facts and themes emerging from some household interviews, were referenced to interview numbers.

We interviewed households in all four sections of the settlement to cover the entire area. Interviewees were selected on the basis that they were decision makers in the household. Five

of these participants had leadership experience in community affairs and three had volunteered for development- and security-related positions in Monwabisi. The results are thus biased by the relatively large proportion of participants who had been or were involved in community leadership and community affairs.

Thirteen of the households were early occupiers who occupied vacant land and built their own shack; one early occupier had bought a shack in 1992 and then bought and sold within Monwabisi Park; eleven others were buyers, and one had been given a shack by her brother. The household participants were well represented by people who knew how the planning and administration system worked. Five women were or had been in leadership positions. One was on the local SANCO executive, three were on or had been on SANCO Area Committees, and one had been a member of the first civic which resisted the CoCT evictions when the first organised invasion occurred in 1997, and currently sits on the local CoCT ward committee. Three others were or had been volunteers at the CRO or were Neighbourhood Watch patrollers (described below). A number of the CRO volunteers who participated in the authors’ workshop with them were involved in SANCO or Area Committees. Thus, many of the respondents were people who had experience of community affairs, planning and administration of Monwabisi Park. Since SANCO members are active in SNAC and the CRO, the findings are also weighted towards a SANCO perspective. However, these biases helped the researchers to make sense of the community organisational structure and the principles that drive it.

3. Framework for Analysing Community Records

Figure 2 below represents a framework for analysing a CRS and similar land tenure information systems (LTISs) and for developing and managing the essential governance institutions and operational and technical systems. It is adapted from a causal process framework for analysing land registration effectiveness, and it is informed by the principal author’s previous work in informal settlement records and in land registration effectiveness and the design and testing of tenure administration software [2–4,22].

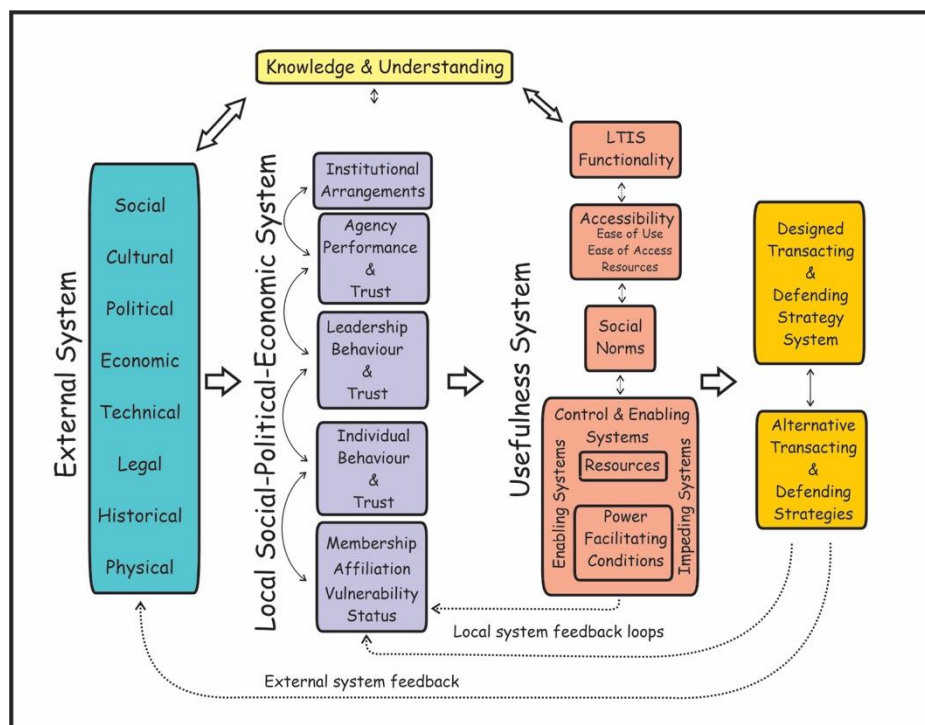


Figure 2. Community Records System Analysis Framework.

The framework's basic structure draws on the Technology Acceptance Model (TAM), a longstanding information systems effectiveness theory [17,23,24]. TAM, in turn, is a practical application of the Theory of Reasoned Action (TRA), also known as the Theory of Planned Behaviour, which is a well-established social psychology theory for explaining and predicting behaviour [25]. Drawing on TRA, TAM holds that an effective information system is one that people use. They are likely to use it if they believe it is useful and it easy to use, social norms within their organisation or community encourage them to use it and power factors encourage them to use it [17].

Portrayed in Figure 2, the whole system comprises four main sub-systems: (1) the Designed Transacting and Defending Strategy System which residents are supposed to use to transact in land interests and to defend their occupation; (2) the Usefulness System; (3) the Local Social-Political-Economic System and (4) the External System. The various sub-systems in the Usefulness System have been adapted to land records systems from TAM going back to research projects in the 1990s [2,3]. The sub-systems in the Local Social-Political-Economic System are informed by research and consulting projects in informal settlements, land restitution cases, post-conflict situations, registration usage case studies in housing projects where the land had been registered in ownership and peri-urban customary land conflict areas.

Examining Figure 2 from right to left, a CRS is judged to be effective if the vast majority of residents in an informal settlement use the system of strategies and generally agreed protocols and procedures (including using the CRS and accompanying documents) for transacting in land and defending their tenure as implied by the Designed Transacting and Defending Strategy System. Transactions may include, for example, sales of a shack, transactions between family members, documenting changes in tenure form as an incremental tenure system evolves, inheriting a shack and arrangements for child-headed households. Defending tenure strategies might include using CRS documents and related documents (e.g., tenure certificates) along with CBO and local authority structures to stave off eviction or demolition of a shack. If the CRS is ineffective and does not meet local needs, residents will use alternative strategies to achieve these ends.

3.1. Usefulness System

If people consider a CRS and the strategy set of which it forms a part to be useful, are positively disposed to it and indicate that they intend to use it, then they are likely to use it continually, and the system may be considered effective. The Usefulness System comprises the antecedents that influence people in choosing a particular strategy set. It has four sub-systems: (1) Software Functionality; (2) Accessibility; (3) Social Norms and (4) Control and Enabling Systems. Functionality refers to the CRS software having the ability to handle the administration of tenure relationships in a settlement. As the discussion on hybrid governance and informal settlements below indicates, tenure scenarios in an informal settlement are likely to be far more complex than those handled by a conventional registration system. Accessibility implies, firstly, that the system operators find the CRS software and operating procedures easy to use. Secondly, residents find the CRS easy to access and easy to use, e.g., if a local records office is within easy travelling distance, CRS staff provide efficient, equitable service in updating data and documents, and residents are prepared to pay the costs in time and money of using the system.

There are trade-offs between the ideal software functionality and ease-of-use *in situations* where tenure relations are complex. For a simple easy-to-use information system to work, it has to be augmented by other systems to handle complexity, for which durable, legitimate institutions and organisations have to co-exist to mitigate risks. Drawing on the first author's design and testing of software in laboratory and field projects and testing different free open-source and commercial software products with post-graduate students over a number of years, a software system that can handle most of the possible complex tenure relationships may be difficult to use, even for skilled IT personnel. A simple design which records only the most basic day-to-day tenure relationships might be better suited to a CRS that community members operate who have basic IT skills. Systems other

than the CRS have to handle complex relationships. These include social processes, dispute resolution forums and recording in narrative form the history that lies behind a complicated transaction, perhaps in a notebook or a video recording. For example, it is good practice to record decisions by CBO leadership relating to the complications that arise when children are orphaned, or a right in a shack and the implied right of expectation of development are aligned with the allocation of a state-subsidised house [3].

The Social Norms sub-system in Figure 2 relates to whether it is socially acceptable to use, or not use, the designed strategy system, and people are motivated to comply or not comply with what they perceive to be the dominant set of norms governing the system. Drawing on the Reasoned Action Approach, social norms that are antecedents to using the CRS and associated strategies provide the legitimising force for people's use of it (or not) and are indicators of their volitional control over their actions. They have the power to choose to comply or not comply with what they perceive to be particular normative behaviour [25]. Social norms in informal settlements are typically heterogeneous and evolving. There are likely to be a range of intertwined normative behaviours, especially if both customary tenure practices and individual titling-oriented land tenure practices co-occur in the settlement, and hybrid or adapted versions of these are adopted and transformed by groups and individuals in particular situations. Consequently, people may accept some of the norms built into the design strategy system and not others. For example, in a housing estate held under registered individual titles, residents may be comfortable registering the sale or gift of a property, but reluctant to register inheritance and actively avoid doing so. It might be a cultural anathema to do so [26]. In our observation, policy makers, title-holders and other social groups may construct different meanings about a title or similar paper document. As a result, the register becomes inaccurate and, from the state's perspective and the formal land market perspective, ineffective [2,3].

The fourth sub-system in the Usefulness System comprises the Control and Enabling Systems. People do not have the power, or have limited power, to choose a particular action. Enabling systems may relate perhaps to the resources required to use the system. For example, a subsidised CRS may encourage residents to use the designed strategies. Conversely, the costs of recording an interest may prohibit landholders from doing so. For example, a private group may control the CRS and charge a fee for using it, which may be beyond the means of some residents. Drawing on the hybrid governance and informal settlements discussion below, control or enabling factors may also relate to power structures. Powerful actors can coerce people to record or not record an interest in the CRS that may affect their control of local access or resources. They may apply this to their cohort of followers and prevent members of other coalitions from performing the same behaviour. Control and enabling forces may also emanate from the External System, for example in the form of existing or new laws and regulations, or from the behaviour of politicians [2].

3.2. Local Social-Political-Economic System

All the sub-systems in the Local Social-Political-Economic System in Figure 2 are critical in the development of the durable institutions for a development to proceed. These include institutional arrangements, the performance of leadership, various agents and agencies and whether residents trust them or not, membership and affiliation of particular groups and vulnerability status. As described below in the discussion on hybrid governance and informal settlement upgrading, the various elements are dynamic, and institutions are likely to be fragile and in a constant cycle of competition and negotiation with the ever-present risk of disruption.

Many of the classes of sub-systems that are critical to creating durable institutions are common to creating an effective CRS. Thus, a CRS is likely to be a critical factor in the development of durable institutions, and itself transformed by these institutions. The form of the CRS, or a change in form, such as who controls it and a change in how records are maintained, i.e., kept accurate, current, secure and transparent, will also affect the functionality and accessibility systems described above. Social vulnerability status is an added variable. In the broader settlement community, vulnerable groups may

be identified in terms of ethnic identity, citizenship or residency status, gender, length of residence in the settlement and political affiliation. Foreigners, women, late arrivals and membership of an outlying political grouping are potentially vulnerable groups. There are also vulnerable groups within households such as older or single women, children, orphans (particularly child-headed households) and the elderly in general. In an ideal world, institutional arrangements should be able to manage these situations, with vulnerability measurements included in monitoring and evaluation procedures.

3.3. External System

The External System comprises a general set of forces which cannot be controlled by the group developing a CRS. These forces may be constraints on development, or they may be development enablers. That said, over time, lessons from settlement upgrading projects such as Monwabisi Park might influence possible changes in local practice, law or policy.

As a CRS evolves, there are three feedback loops to consider, identified in Figure 2 as Local system and External system feedback. As the system evolves and people use it, lessons are fed back into the antecedent systems. The development of knowledge and understanding as system users, operators and designers learn from experience also influences the system resilience. Levels of knowledge and understanding should increase among the role players and users as the situation evolves, alongside residents adopting particular strategies to manage their tenure while institutional arrangements continue to be negotiated. These situational adjustments are likely to lead to the emergence of adapted social norms, and consequently the CRS is likely to adapt and transform.

3.4. Applying the Framework in Sensitive Tenure Situations

The framework was developed to structure studies of LTIS in complex situations. Drawing on both authors' experience when applying the framework, the best indicators for weighting field data are responses that show that people have actually applied a particular set of strategies to record a transaction or defend their tenure, suggest why they chose those strategies and illuminate the actual or potential consequences thereof. The next set of indicators are residents' observations of strategies that other people have used in their settlement, their understanding of why they chose those strategies, the consequences of people using a particular strategy and their evaluation of that situation. Following actual or observed experience of particular strategies, drawing on the Reasoned Action Approach, researchers and managers should assign significant weight to responses where people state an intention to use a particular set of strategies [25]. This should be qualified by an evaluation of their knowledge and understanding of the different strategy sets available to them. The better their knowledge and understanding, possibly derived from prior experience of using particular strategies, the greater weight can be assigned to their responses. Positive or negative attitudes towards a particular strategy set are also predictors of an intention to use or not use that strategy set, but should not be afforded the same weight as a description of how a participant used a strategy set or a stated intention to use or not use that set. Expressions of beliefs about a particular strategy set are not good predictors of the likelihood to use or not use that strategy set [3,17,23–25].

In our experience of informal settlements, post-conflict situations and other peri-urban settlements characterised by conflict and competition in a few African countries, open ended or semi-structured interviews and a detailed description of the various facets of a case study are likely to produce satisfactory research data. Data relating to some of the elements and sub-systems in the framework may be derived from participants' narratives, but they require sensitivity to the nuances in their expression rather than use of direct questions that are often unsettling. Participants may not be comfortable answering particular direct questions. In a worst-case scenario, insensitive questions may upset a participant or even catalyse a conflict. Quantitative questionnaire surveys are unlikely to provide insight, as there is much possibility for misunderstood interpretation of the questions by the respondent and the responses by the interviewer. In a structured, quantitative questionnaire the interviewer and

interviewee may not assign the same meanings to certain concepts and artefacts, and the researcher may thus miss important nuances in their responses.

Relating this framework of analysis to Monwabisi Park, the study explored the strategies that residents used to transact or defend their tenure and why they adopted particular strategies. Important factors not explicitly reflected in the framework are hybrid governance role of organisational culture in planning, implementing and managing a CRS. These are discussed below.

4. Hybrid Governance and Informal Settlements

Monwabisi Park illuminates the institutional dynamics of hybrid governance arrangements that come into play in running and maintaining a local land record system. This section briefly reviews hybrid governance and informal settlement literature and identifies a gap regarding land tenure administration and hybrid governance. Social and political dynamics that often prevail in informal settlements are then explained in terms of hybrid governance and informal settlement theories.

4.1. Hybrid Governance and Informal Settlement Land Administration

Only a few countries come close to the well-ordered, rule-based and structured rational state envisaged by Max Weber, and these states took centuries in the making [27,28]. Notwithstanding, building functioning and effective state institutions are often central to donor-driven development assistance to fragile states, often termed good governance. An alternative school argues that instead, one needs to embrace hybrid modes of governance, working with arrangements of networks, actors, institutions and structures as they actually exist [27,29,30]. Where state institutions are weak or lack legitimacy, local institutions often develop to fill the gap [31]. Hagmann and Péclard posit that typically, there are multiple, heterogeneous actors struggling for control, who constantly renegotiate power relations which have spatial, temporal and social dimensions, and negotiation arenas often reflect the aspirations of the powerful over weaker groups. These struggles occur in different negotiation arenas and negotiations are seldom between parties who hold equal power. Among the objects being negotiated are power, assets/resources, legitimacy, entitlements, and styles of expression [32]. There may be a number of constellations of power where the main decision-making power lies among different individuals, groups and organisations extending from both inside and outside a settlement [33–35].

Hybrid governance may be inescapable in many situations, especially if the state is unable or reluctant to fully govern certain situations, such as an informal settlement where the first occupants may invade the land illegally [5]. However, hybrid governance offers no easy solutions, and there are numerous risks to recognising these arrangements, especially risks of human rights violations. Officials may be reluctant to recognise hybrid arrangements as they hold personal risks for them as described below. Meagher et al. [31] note that there is a risk of recognising and strengthening oppressive, coercive, illegitimate forces and unacceptable behaviours. Unofficial organisations may be more oppressive than state organisations.

In informal settlements, municipalities, CBOs and NGOs may be involved in governance and administration of land tenure arrangements. Local, national and international migration and circular migration (e.g., back and forth migration between an urban and rural area) patterns add a layer of complexity to land tenure administration. Adapting Benda-Beckmann et al. [33], power and control over particular property objects (e.g., land, access to water supplies and toilets) are shaped by a number of different social and legal interests and obligations, and due to national and international migration, the constellations of relations may stretch from cities to rural communities and even various parts of the world.

Tenure relations are likely to be heterogeneous in these situations. In an environment of normative and legal pluralism, there may be multiple perspectives of values, facts, meanings, processes, structures, power relations, personnel and technology [36]. Local politics in informal settlements are often characterised by people acting in solidarity against external forces, e.g., to invade the land or resist eviction, and simultaneously engaging in ongoing internal conflict and competition over the

objects in Hagmann and Péclard's [32] list above. Coalitions form and dissolve in response to local system dynamics as well as forces external to the settlement (e.g., the state or family members in a rural area who may engage in circular migration). Individuals may be affiliated to different competing groups simultaneously (e.g., family, lineage, youth groups). At times they may be expected to compete and even engage in violence on behalf of one group against the other. For the individual, this means ranking and changing their affiliations to different groups on occasion, if temporarily. Rules and norms are fluid and may shift and change in response to new challenges or as a result of manipulation. They are continually shaped, transformed and re-constituted, both as a consequence of and a cause of conflict, competition and negotiation [37]. The rationale behind why and how things function as they do, or appear to do, may not be clear to an outsider, but they make sense to people living within the arrangements in the settlement [38].

Adapting Ostrom [39] and Scott [40], institutions are not fixed and rule bound. They develop from initially fluid and unstable conditions into more durable relationships and arrangements that build on existing relationships and dynamics. As durable institutions emerge, perhaps through a number of iterations, they create social stability. The systems of rules, norms, strategies and repetitive actions that constitute these institutions reach a state where they harness resources and are capable of regulation.

In an informal settlement upgrading intervention, creating and maintaining durable, legitimate institutions are a first step in creating favourable conditions for a development project to proceed [7]. In accordance with the issues raised in Section 3, we submit that durable legitimate institutions are also critical to an effective CRS. The timeline for an institution-building intervention to take root may be long, considering that even durable institutions are constantly negotiated. This, in turn, is likely to cause frustration as local political dynamics and constraints external to the settlement such as the actions of politicians and officials, planning regulations, existing law, infrastructure and resources delay development and are also subject to possible further planning and law-making [3].

The prospect of development and improved living conditions in their constituency may be sufficient incentive for authority figures to relinquish local power in order to negotiate a path to durable institutions. Given the different policy perspectives concerning informal settlements within a particular jurisdiction, the nature and timing of the development may be difficult to establish. The durability of institutions may also be subject to periodic shocks. For example, in an informal settlement upgrade, a major challenge occurs when the beneficiaries are selected. This often occurs after a disaster such as a fire or flooding, which gives the authorities a chance to 'regularise' the settlement through re-blocking, meaning lay-out planning for tenure delineation and infrastructure [41,42]. Those who lose out, especially hopefuls on the margins of benefitting, have an incentive to disrupt the project in order to be accommodated. In addition, new leaders are likely to emerge in coalitions opposing the organisations, institutions and leadership group who are driving the development. These opposing coalitions will demand to be accommodated in the form of similar benefits or perhaps invade new houses intended for the official beneficiaries [3].

An important question is how to create a durable CRS under hybrid governance arrangements. There is, however, a gap in the literature on land tenure administration through a lens of hybrid administration arrangements, in contrast to the wealth of literature on state-run tenure administration systems such as a title or deeds system. This gap must be made up by the presentation of empirical data and its analysis, which, moreover, does not have the benefit of much comparative literature.

4.2. Informal Settlement Upgrading

There are two main schools of thought on how to go about informal settlement upgrading in South Africa and internationally. The dominant paradigm is individual title implemented through large-scale titling schemes linked to formal housing. In South Africa, this is the pervasive policy in state-subsidised housing developments. This approach follows the idea of 'rollover' which involves total redevelopment of the land in a reconfigured layout. Everyone is moved out of the settlement to a temporary relocation area (TRA) while construction proceeds and then moved back again, or

residents are moved to a greenfield development on vacant land. The second school argues for *in situ* upgrading and generally embraces—or at least recognises—hybrid governance with implied incremental participatory planning and development [7,43]. The reasoning is that one should recognise, adapt and develop the existing local level arrangements to create a community plan and work with that as a situation evolves [44,45]. The latter approach is what VPUU facilitated in Monwabisi Park.

The *in situ* incremental upgrading approach involves small changes made by many actors over a long period. The focus is on processes which bring about improvements at a particular time [46]. It has to be context-specific, and communities must be centrally involved [44,47]. State agencies, NGOs and CBOs are generally involved, and how they interact with one another and how competing agendas are resolved are part of the dynamic [47]. Thus, strategies are constantly renegotiated and reformulated, possibly in a contested development vision.

Both approaches have their challenges. There has been a growing realisation among some policy makers and officials in South Africa and in Cape Town that the rollover titling approach is not working, but they are not sure how to make the alternative work [19,46,48]. In general, there are differing opinions between different branches and individuals within local planning and development authorities on how to go about informal settlement upgrading. Importantly, a number of officials are opposed to incremental approaches [38,49]. Abrahams observes the importance of involving all the affected departments in a city in low income housing and *in situ* informal settlement development. A challenge is that some officials and their departments might consider the incremental approach to be a temporary solution (usually understood to be eventually supplanted by a rollover development), and consequently do not commit the time and resources that might make an incremental approach a permanent development work [50].

Officials may be wary of the personal risks of incremental development innovations and hybrid governance arrangements. Groups of senior officials whom the first author interviewed in two other South African cities, i.e., not Cape Town, related how allocating land in a form that is perceived to be unequal to what is being delivered in neighbouring rollover state-subsidised housing projects can be leveraged by local activists as unjust. This may spark political protest, and officials tend to bear the brunt of the blame (Int #102-14). Officials may become the “face-of-failure” if innovations in land development projects have unsatisfactory outcomes, or politicians can manipulate the outcomes for political ends by invoking the mantra of “official failure” (Int #131-16).

In synthesis, relating the above discussion to record systems in informal settlement upgrades in reference to the analytical framework in Section 3, firstly, it would be important to find consensus among different leaders on one particular Transacting and Defending Strategy System. If local politics suggests that different factions are likely to offer different strategies, it would be better to hold off until the consensus on a single system is possible. Secondly, the sub-systems in the Local Social-Political-Economic System are likely to require constant attention in order to create a stable institutional and leadership environment for a CRS to function effectively. Thirdly, risk management strategies relating to the information should also cater for periodic shocks in local politics, especially if particular groups in a settlement (e.g., latecomers) are excluded from the benefits of settlement upgrading [3].

5. Organisational Culture and Community Records Development

Organisational culture refers to the ways organisations do everyday things and their ways of tackling problems. An examination of organisational culture is particularly relevant if an alternative information system to a state-run system is contemplated. Using Mintzberg et al.’s [51] schema, relevant cultures may be political, adhocracy and machine cultures.

In a machine culture, specialisation and standardisation of work processes and technostructure are a key part of the organization [51]. Rules and policies as well as the bureaucratic hierarchy are very important. Leadership style tends to be command-and-control. Deviation from standard procedure, at least at the lower levels in the organizational hierarchy, is discouraged. In general, the machine culture

typifies land registries. Land registration follows strict procedures and rigorous document checks. Deviation from prescribed procedure is seldom possible.

On the other hand, CBOs involved in settlement governance may have a political culture. Political organisations may take on temporary forms, reflecting transitions in structure or strategy that evoke conflict. Others are more permanent, but with competing internal forces driving conflict [51].

Adhocracies are found in complex, turbulent environments that require sophisticated innovation and cooperation [51]. Standards and rules are often eschewed as people adapt to what they believe best fits the problem context. In information systems management, continual coordination and communication through a variety of liaison devices is often essential in an adhocracy [52,53]. In contrast to top-down planning, which may characterise a machine culture, or bottom-up planning, in adhocracies an evolutionary approach to information system design and implementation is often adopted [54]. The system is developed and changed as the information system needs evolve, and many of these needs are unknown at the outset [55]. In the authors' experience, certain NGOs involved in land development and land restitution exhibit an adhocracy organisational culture. As the Monwabisi Park case shows, an NGO may adopt an ad hoc approach to particular activities in the development cycle, such as developing a CRS. However, the NGO as a whole may not be imbued with an adhocracy culture.

6. Monwabisi Park

6.1. Development History, Institutions and Strategies

At the time of the research, the population of Monwabisi Park comprised 6900 households. The settlement is situated on 64 hectares of land comprising four parcels owned by the CoCT and the Western Cape provincial government. The Monwabisi shacks represent an estimated 5% of the informal dwellings in Cape Town [1]. As portrayed in Figure 1 above, the main role players in the hybrid land governance arrangements are two CBOs, SANCO and SNAC, the CoCT and VPUU. VPUU acts as an intermediary between the CBOs and the CoCT and provides expert support for the development planning, community-level land governance and the CRS. There are a number of other hybrid governance actors such as the South African Police Service and the Neighbourhood Watch that do not play a direct role in land tenure administration, but contribute to safety and stability.

Comprehensive, organised land invasion started in late 1996 when approximately 50 people built shacks on the site. Initially, the CoCT evicted shack dwellers and planned to move everyone off the site. A local civic was formed to resist the evictions. It later became part of the Monwabisi SANCO branch, assuming community-level governance (Int #111, 104, 107, 112, 124) [45]. There was an elected SANCO main committee and a number of Area Committees which were responsible for blocks of dwellings (Int #2019). Some official recognition was accorded in the form of basic infrastructure development when the CoCT installed water standpipes and communal toilets [19]. The CoCT allocates keys to each toilet, reportedly 5 families per toilet. VPUU mapped the toilets and water standpipes in QGIS, which is part of the suite of software packages used in the CRS (Int #2012).

Planners in the CoCT wanted to try a community-based, *in situ* planning and tenure improvement approach in Monwabisi Park as an alternative to the rollover approach [19]. VPUU became involved in Monwabisi Park in 2009, adapting *in situ* development to their established urban upgrading approach. VPUU saw crime reduction in violence- and crime-ridden communities as fundamental to development. Urban LandMark, an NGO which had developed strategies for incremental tenure upgrading, assisted in developing a tenure security strategy in 2010. Some of its members provided technical advice to VPUU to develop tenure strategies, and facilitated workshops with officials on the legal, zoning and layout options for development to proceed [56].

The VPUU approach focused primarily on crime prevention, social development and participatory planning in urban design, amongst other activities, in order to upgrade the existing settlement from essential service levels, i.e., communal taps and toilets, to higher service levels without relocating

people out of the settlement in the process. Fundamental to the approach is participatory planning: citizen empowerment where local residents have a significant level of decision-making power. Experts should be catalysers, not leaders [7]. This is in contrast to token participation where outsiders consult and appoint community participants who foist their decisions on a community in a manner that often does not address community priorities and can cause a great deal of anger and frustration [57]. The VPPU approach is to ensure that activities are part of an agreed Community Action Plan and are community driven, e.g., baseline surveys, enumeration and information systems such as a CRS (Int #2021). To manage expectations, VPUU documents indicated that it was gathering and processing information to negotiate and plan development such as immediate services and infrastructure and not with the purpose of conferring rights or houses [7].

There were a number of uncertainties in moving forward with the VPUU approach. The existing legal framework was ill-suited to an incremental upgrading strategy because it does not necessarily lead to individual title. Getting legal recognition for the system of blocks (described below) in the community layout plan as well as assignment of administrative authority over them within the CoCT proved to be a major challenge [56]. Re-blocking involves reorganising and moving shacks to create public space, moving shacks out of areas vulnerable to flooding, providing access to services such as toilets and water, reducing the risks of shack fires and creating access for emergency vehicles [58]. Dealing with a number of planning, servicing and legal constraints was not clear at the outset, and the organisational culture within parts of the CoCT was not geared to handling existing community-based procedures in the development planning process. There was little broad official recognition of hybrid land governance within the local government [56].

VPUU's upgrading approach rests on a set of strategies that will lead to tangible improvements in living conditions and personal security in the short term, while providing a long-term trajectory of where the development initiatives might lead. As a first step, SNAC was established in August 2009 to drive development planning. It was established through a process of stakeholder analysis, development of terms of reference and election of representatives, followed by eight weeks of leadership training [7]. SNAC has 20 members representing a number of groups that include SANCO, the Neighbourhood Watch, health, faith-based organisations, social justice, youth, NGOs and sports development. Each month SNAC holds a committee meeting, a meeting with VPUU, and a VPUU-sponsored organisational development day to develop leadership and administration skills and knowledge. SNAC also holds periodic meetings with stakeholder groups such as SANCO. SNAC develops local policy and strategies, and then SNAC and VPUU present these to the general community and leadership in the different structures (Int #2013, #2005). In short, local leadership retains political and decision-making power, while VPUU helps to boost their capacity and resources.

After SNAC was established in 2009, the issues to be addressed were identified in workshops and a baseline survey, which involved approximately 10% of the households. A Community Action Plan (CAP) was developed and signed by both the SNAC Chair and the Mayor of Cape Town in February 2010, signalling unique partnership arrangements. Important issues that emerged included safety and security—domestic crime and crime-location-activity relationships outside of the home; tenure security; fire and flooding; infrastructure such as toilets, electricity and roads; and economic opportunities. There was already a rudimentary paper-based land record system operated by SANCO called *Yokuhlala Incwadi* (isiXhosa for 'Residence Book'). It identified rights holders according to the assignment of numbers with the prefix 'WP', acronym of Western Province. New arrivals were assigned a WP number and a site [7,19,59]. The CAP became a lobbying tool and the basis of a proposed rezoning application [19]. It included immediate short-term actions, annual action plans and a five-year plan. VPUU's policy was to ensure concrete actions are associated with each plan, without which agreed goals and plans tend not to materialise (Int #2005).

For administration purposes, the settlement is divided into four sections, A, B, C and M. Each section is divided into blocks that are bounded by roads and walkways for administration purposes

and emergency services (Int #2012). A numbering system was developed using a hierarchical section–block–shack number to uniquely identify and locate each shack (See Figure 3).

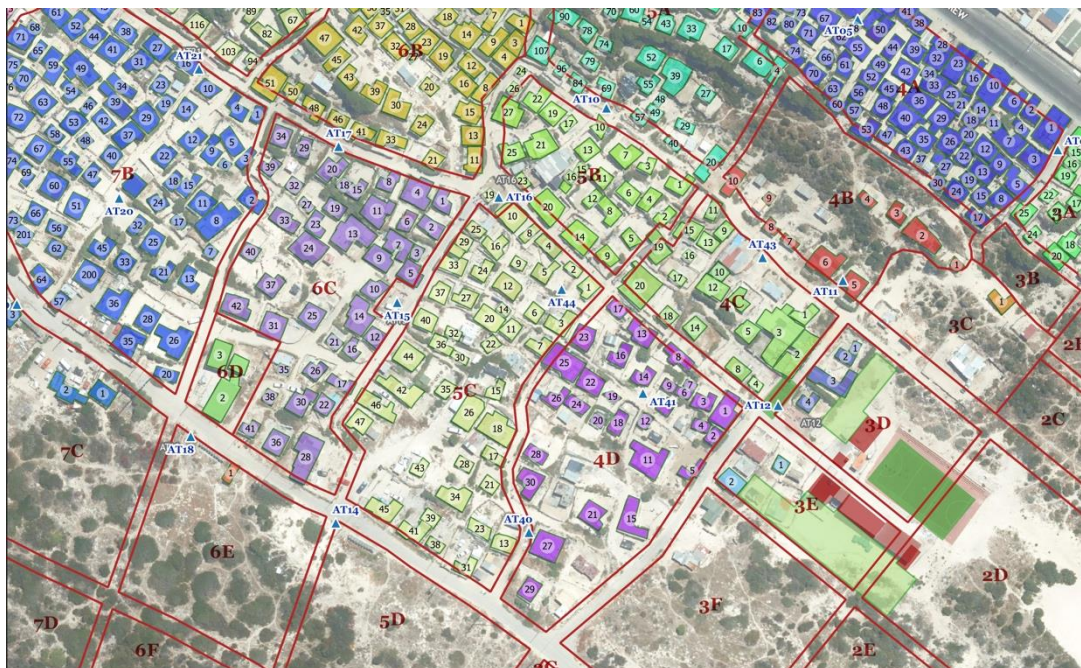


Figure 3. Colour-coded blocks in the Monwabisi Park GIS.

From May 2011, community members conducted door-to-door enumeration of the 6470 households. Enumeration included geo-locating each shack using a handheld GNSS receiver and aerial imagery. Enumerators stencilled enumeration numbers on each shack, collected demographic data and at the same time imparted safety information and awareness of the VPUU project.

By October 2011, 90% of the households had been surveyed and the long process of surveying those that had been missed followed [7]. Residents were encouraged to verify the correctness of their data. By May 2012, 97% of the households had been surveyed. By late 2013, VPUU had assembled the information for the CoCT, as the landowner, to generate Certificates of Tenure. In February 2014, the mayor endorsed 6470 Certificates of Tenure, which were handed over to residents. VPUU established the CRO in shipping containers on site to house the records in 2015, some six years after VPUU had become involved in organisational development, leadership training and institutional development as part of the participatory planning process. By July 2016, the CoCT and CRO had distributed an estimated 85%–90% of the tenure certificates [19]. Re-blocking was managed using QGIS to map existing pathways and roadways. No shacks had to be moved (Int #2021). As shown in Figure 3, each block has a different colour code when viewed in the GIS.

A Neighbourhood Watch was set up comprising community members who patrol the settlement to assist the police. This is an example of official recognition of hybrid governance in the Western Cape, relating specifically to security matters. The Neighbourhood Watch is aligned to the local Community Policing Forum, which is established in terms of *South African Police Service Act No. 68 of 1995 ss. 18–23*. In addition, Neighbourhood Watches are regulated by the provincial code of conduct for neighbourhood watch structures [60]. Crime levels have dropped, arguably due to the development planning initiatives and the presence of the watch, but they remain high (Int #2017, #2019).

Negotiations involving the state electricity supply commission (ESKOM), SNAC, CoCT and VPUU representatives resulted in an electrification plan in 2012 using the enumeration data, the shack numbering system and the GIS to manage the process. The numbers then became known as the ESKOM numbers [19]. Electrification provided a much-needed basic utility and improved fire safety, as informal settlements are notorious for fires started by defective or tipped over paraffin stoves. The

process also identified ‘illegal’ shacks as they were not electrified, and they did not have an Eskom number stencilled on them. These are currently identified by red shaded polygons in the CRS GIS and known as ‘red roof shacks’ as shown in Block 4B in Figure 3 (Int #2002, 2014, 2018, 2019).

VPUU prepared a rezoning and subdivision application to the CoCT starting in 2013. However, the existing law could not accommodate the VPUU approach, and there has been an impasse over legal zoning and development in terms of engineering services. Some CoCT officials saw moving a significant number of people as essential to development, while moving large numbers of people conflicted with VPUU’s planning philosophy of ‘move no-one’. CoCT engineers rejected the block layout in the community plan as a basis for installing engineering services, arguing that some structures would have to move as earth works would be necessary. CoCT engineers claimed that initial capital costs and long-term maintenance costs would be significantly higher than the plan suggested, compounded by practical challenges to installing the services. VPUU engineers, on the contrary, claimed that their plans and strategies, including engineering services and utility plans, offered both a cheaper and workable solution. Officials were also concerned about having to bear the face-of-failure risks as early arrival households would have larger plots than later arrivals, which would likely generate conflict around fairness. On the same theme, the plots in the block layout plan were significantly smaller than the plots in a nearby state-subsidised greenfield/rollover housing development which could, in their view, foment political unrest. Officials also believed that the City should retain full jurisdiction over how the land is developed and serviced since it carries the responsibility in the long term. NGOs like VPUU may come and go (Int #2000, 2002) [19]. VPUU were waiting for the CoCT to propose a way forward as development had stalled in July 2019 when this article was being formulated (Int #2021).

VPUU had constructed a community centre in Section A in 2017, while the CRO in Section C had become a one-stop-shop for information related to the settlement and various programmes supported by VPUU. This included updating tenure-related information and a fault-reporting device for taps and toilets. The latter involved community operators using mobile devices to record positions of faulty taps and toilets, which were then downloaded into QGIS to alert the authorities to faulty infrastructure. The mobile software system was developed specially for Monwabisi Park volunteers. The CoCT’s response rate to reported faults has reportedly been good, with repairs effected timeously. The CRS provided IT training for the operators and housed several additional services. These included the Neighbourhood Watch, Early Childhood Development projects (ECD) and Local Economic Development programmes (LED). It also housed a Citizens College providing follow-up leadership training to the initial training offered to SNAC (Int #2012, 2014, 2021).

6.2. Tenure Governance Protocols

A significant development in the local governance arrangements was the generation of a set of ‘community protocols’ by community representatives that VPUU facilitated in 2015, the same year that the CRO was installed in the settlement. These reflected the locally accepted rules of tenure governance. This demonstrates the element of social norms relating to tenure administration strategy, which is a key category in the Usefulness System described in Section 3 above. The protocols are a form of explicit rulemaking where local norms were discussed and transformed into a set of locally legitimate rules or protocols.

This law-like process of generating local rules for tenure governance sets the CRS in Monwabisi Park apart from most other local tenure security projects or local record systems in South Africa. Many tenure-related projects do not engage in participatory processes that result in locally legitimised sets of guiding rules and principles [61]. Usually, rules are implicit and often contested and manipulated, as the discussion on hybrid governance and social change above illuminates. The protocols also create a set of social norms relating to land tenure administration that help to smooth over the potentially differing norms among the population where certain norms are heterogeneous. Residents with long-standing ties to the city are more acquainted with land tenure administration procedures in the city, while newer arrivals with strong links and ties to rural areas are more accustomed to customary law and

practices [3]. In Monwabisi Park, the population is socially and linguistically homogenous with the vast majority having migrated from the Eastern Cape, but they may have stronger or weaker cultural ties with their rural homes.

The Monwabisi Park protocols were developed in a series of engagements where stakeholders identified the acceptable processes by which members could attain, maintain and transmit rights. These local rules and criteria guide access, community membership and validation of rights of tenure, residence and future development. These were accepted as the standard operating procedure by leadership and stakeholder groups within Monwabisi Park for governing tenure and physical changes to shacks. They thus inform localised planning issues related to tenure rules and controlling influx. Those protocols that are relevant to the Monwabisi Park community structures and the CoCT are replicated on the Certificates of Tenure [20] (Int #2014). Importantly, the protocols are ratified periodically with CBOs (Int #2021).

In brief, the protocols are:

1. No new structures may be erected.
2. Residents may own only one structure.
3. Structures can be extended following an approval process that involves SANCO and CoCT departments; similarly, they can be moved if they are in unsuitable positions, e.g., areas subject to flooding.
4. Shack owners have to live in Monwabisi Park.
5. Owners can sell their shack, using procedures that include SANCO Area Committees.
6. Owners cannot rent out their shacks.
7. South African identification documents are essential for the CRS (and access to the state-subsidised housing programmes), and shack owners are expected to obtain one if they do not have one.
8. Neighbours and SANCO Area Committees are expected to take note of vulnerable members of the community such as elders, women and child-headed households and ensure that they have valid certificates of tenure and up-to-date community records and that their rights are not extinguished unfairly.
9. If the wrong person is registered as the owner, such as the partner of the working owner, a tenant or a caretaker, owners are encouraged to update their records in the CRS.
10. Every owner is encouraged to compile a will.
11. Provision of dispute resolution structures comprising a council of elders, mediators and other leaders or stakeholders to adjudicate conflicts in the event of an argument over shack ownership.
12. If people refuse to register their right in the CRS, their details are to be recorded anyway and SANCO committees would try to persuade them to register.

(Int #2014) [20]

In terms of the local arrangements, the CoCT's Anti-Land Invasion Unit (ALIU) is responsible for implementing the rules; authorised by dint of both City law and in terms of the protocols to demolish new shacks and unauthorised extensions to shacks (Int #2013, 2018, 106) [6]. This enforcement function by the CoCT is critical *in situations* where there is general agreement among the different stakeholders that no new shacks are permitted. CBO members cannot be expected to enforce this type of rule as they have no power to do so. It may also be dangerous for them to do so [3].

Transactions in shacks through buying and selling have evolved into generally accepted sets of procedures that most people follow. A prospective buyer should first get a character reference from a SANCO Committee member(s) (usually an Area Committee member) who checks that the buyer has not been expelled by another community. In most cases, the seller and buyer sign an affidavit, which includes the contract of sale details, witnessed at the police station or by the Area Committee. The

latter refers the signed affidavit to the SANCO offices for checking and stamping. SANCO confirms the sale by writing a letter recording the sale. The seller takes the buyer to the CRO with their Certificate of Tenure, where the sellers' details are confirmed in the CRS. After confirmation, and in the presence of the relevant Area Committee, the money is exchanged. According to an Area Committee member, most people follow these procedures (Int #123). The CRO issues a Letter of Residence confirming the change of ownership to the buyer. There are variations to the form and sequence of these procedures, for example, if a police officer will not witness the affidavit, the official affidavit form is taken and witnessed by someone else with authority.

In monitoring and evaluation workshops in 2015 involving VPUU staff, CoCT officials and land experts, some officials expressed concerns about the hybrid governance risks mentioned above and where the situation might lead. These included the power of local elites and gatekeepers, the risks of potential abuse of power and corruption, lack of accountability and the possibility of vulnerable residents being evicted. There were also concerns about localised tenure options leading to a dead end where legal tenure might be impossible, and concerns about undeliverable political expectations. That said, no alternative strategic options emerged. Hybrid governance is arguably inescapable. CoCT officials nevertheless emphasised that the land records had to be verified and accurate at the outset and they should remain current, as they could project well into the future, perhaps even twenty years [20].

Tensions between internal role players and players outside the hybrid governance partnerships are likely to flare up into conflict, as hybrid governance literature discussed above indicates. During the course of VPUU's involvement in Monwabisi Park, internal conflicts have resulted in tense stand-offs at times. VPUU staff have been threatened and there have been threats to burn down the CRO (Int #2002). There have been sporadic attempts by external agents to instigate organised land invasions of the unoccupied land in the settlement. One such attempt in 2014 was politically motivated by the Economic Freedom Fighters, a national political party, and possibly by local ward councillors [19]. SNAC and the CoCT resisted the invaders. A critical part of the CAP protocols was that no new arrivals are permitted, and the protocol was actually enforced (Int #2005). If shack numbers increase, it would impact negatively on development plans and almost certainly halt any form of *in situ* development altogether. In 2018, there was nevertheless widespread land invasion in Khayelitsha, including Monwabisi Park, and Monwabisi Park has extended southward as a result (Int #2013, 2021).

6.3. The Community Records System

VPUU developed the CRS using an evolutionary approach to information system planning, which fits the problem-solving environment to which an adhocracy culture is likely best suited [54]. VPUU developed the CRS incrementally according to needs negotiated at various levels of participatory planning as the development process evolved. In the process, VPUU did not examine international standards or existing tenure administration software such as the STDM. As a CRS manager noted, given the environment of constant negotiation, addressing the immediate needs of what is required of agreements and maintaining partnerships are more important than an ideal technical design (Int #2014). This fits the description of problem solving in adhocracy culture above. As noted earlier, we did not examine VPUU's organisational culture. We only assign the adhocracy classification to the information system planning approach.

VPUU first examined what type of software the CRO volunteers could best handle when transcribing hardcopy enumeration data for input into the database and established they could use Excel. Learning from this, they developed software that is simple in structure, easy for CRO staff to use and flexible in order to cater for changing needs. Free open source software (FLOSS) was a guiding principle so that licencing issues would not impede operations, particularly when maintaining the currency of the records is of utmost importance (Int #2014).

The CRS software has a simple architecture that uses QGIS and SpatiaLite database software. The shack is a property object that has a defined location at a particular time. Unlike a parcel-based system, the shack can move, for example if it is in a precarious position. The ESKOM shack number

(section–block–structure number) is the primary identifier. The QGIS has a layer in which polygons representing rooftops were created by digitising a rectified aerial image and assigning the shack’s ESKOM number (see Figure 3). The polygon is joined by the ESKOM number to a simple attribute list stored in SpatialLite [62]. The attribute list includes the ESKOM number, the WP number, the VPUU enumeration number, data relating to the household head(s), resident names, dates of birth, dates of arrival, relationships between residents (e.g., parent–child), electrification status, Letter(s) of Residence (see below) details and record security information, such as which operator changed a record and when.

The Certificates of Tenure were generated from Community Record system (CRS) data. The CoCT would not issue updated Certificates of Tenure in the event of a change in shack ownership. A possible reason is there is no national or local law that provides for it, and hence, no budgets or institutions to implement it. In response, to keep the records current and accurate, the Community Records Office (CRO) issues Letters of Residence to reflect a change in tenure status/ownership relating to a particular shack. Nowadays, the data pertaining to the CoCT Certificates of Tenure as well as the Letters of Residence are stored in the CRO in Monwabisi Park. There are daily backups on site and weekly backups off-site (Int #2014).

The attributes are kept in a simple list in SpatialLite. It is not a relational database as espoused in the STDM or a data model developed by the first author called Talking Titler. It therefore does not adhere to the rules of normal form, which define a rigorous relational database. Consequently, the CRS does not handle queries about complex tenure relationships. Managing complex tenure relationships and tenure-related conflicts are left to social processes, dispute resolution forums and SANCO’s Area Committees.

The VPUU system, with the use of ESKOM numbers, differs from the SANCO WP numbering system, as the WP is a person-based system, more like a form of population register, whereas the VPUU system is property object-based, irrespective of who lives in the shack. The WP number records personal details when a person arrived in the settlement, but not their shack number or location. If the person moves, the WP number moves with them, and so presents practical problems as a physical address system. There are also some duplicate WP numbers dating back to the time when two SANCO branches existed, which further constrains it (Int #2014).

The Letter of Residence provides an update of the occupiers of the shack, replicates the conditions of tenure (i.e., the protocols) that are on the Certificate of Tenure and affirms that the CoCT is the landowner. It includes the names of the people living in the house plus a screen shot from the GIS showing the occupants’ shack roof and its identifier plus the shacks around it (see Figure 3). It also has a locality plan, which is a screen shot extracted from the GIS showing the relative positions of the blocks in the Section that are close to the relevant shack that is the subject of the Letter of Residence. It does not show the chain of occupation, i.e., who has moved out of the shack, why they moved out and what transactions occurred that motivated them to move out. Experience from deed and title registry systems around the world indicates that it is advisable to be able to retrieve this chain of occupation (chain of title) in some way.

It is worth noting that according to the Letter of Residence system, applications for change in shack ownership are sent to the CRO, which is supposed to forward the application to the CoCT (Int #2018). The Letter of Residence does not mention the CBOs involved in settlement level land governance; i.e., SANCO, Area Committees and SNAC. However, our interviews indicate that the process of changing shack ownership goes through Area Committees and SANCO as the locally recognised authority.

7. Resident, SANCO, CRS and SNAC Interview Findings

In the resident interviews examining CRS effectiveness, we first asked what was working well and what was not. This put respondents at ease, provided the context for the questions that followed and pointed to the logic and direction of these questions. In some cases, facts, beliefs and attitudes relating to the CRS emerged in these sections of the interviews, and they were comparable to many of

the elements identified in the framework. We then explored parts of the residents' life histories relating to how they had come to live in Monwabisi Park, and this logically followed to the strategies they had used to acquire an occupation interest.

We thereby examined a number of themes relating to CRS effectiveness, which are reflections of the system's elements described in Section 3. These are especially relevant in their strategies in transactions in buying and selling a shack and strategies in defending tenure. The latter was illustrated by their answers to the question of whether they knew of people who had been evicted, what they would do and who they would approach for assistance if someone tried to evict them. We explored particular themes until saturation, meaning the point at which the same results began to emerge in successive interviews, and with no new data emerging. The examination of strategies and whom residents would approach for assistance revealed facts and intentions, as well as beliefs and attitudes, about the roles of SANCO, VPUU, the CRO and the CoCT in the overall development and land tenure administration. Group sessions and informal discussions with SANCO, SNAC and CRO staff provided detailed context and additional information to the household interview responses. These discussions revealed the positive aspects and challenges of operating under a hybrid governance regime when there is some reliance in cooperation, as opposed to working under an official regulatory framework.

The general findings relating to the context of planning, administration, development, hybrid governance and personal security are presented first. This is followed by the findings on the different strategies that residents had applied or intended to apply.

7.1. Planning, Administration and Development

In response to the 'what was working well' question, the positive aspects of the planning, administration and governance arrangements that most residents identified were improvements to local-level governance and personal and tenure security, as well as a general appreciation of tangible improvements in infrastructure. Fifteen households (10 early occupiers and 5 buyers) identified improved planning, administration and governance as their major positive experience with regard to the community development process. In general, residents reported that the committees work well and the community is well organised.

In the group discussion with SANCO officeholders, it emerged that they regarded VPUU's contribution to ongoing leadership training as a critically positive intervention (Int #2019). Two community leaders observed that VPUU's intervention had transformed Monwabisi Park from a community that would not cooperate to one that participates (Int #2017, 2020).

Fourteen households identified infrastructure (especially toilets), water and electricity as major positive attainments in the development process. Households also listed a resource centre built by VPUU, parks, crèches built under the Early Childhood Development programme for children of working families, the CRO/CRS (which participants referred to as 'the VPUU office') and a mobile clinic in the settlement. Two households specifically mentioned the Certificates of Tenure as a positive development. In addition, the CRO had assisted one man in getting grants to set up his small business.

In contrast, there were high levels of dissatisfaction among some households with regard to the lack of progress in longer-term development. Eleven households expressed their frustration over unfulfilled expectations relating to provision of houses and the development of streets, which were in danger of being seen as empty promises. Interviewees complained that there had been many meetings but "nothing happened", with a loss of faith in the committees and the development initiative. SNAC members expressed similar frustrations in a heated meeting with the authors and VPUU representatives (Int #2016). These expressions of frustration over lack of development triangulate with what Schreiber and Barry [19] observed in key-informant interviews with officials, VPUU staff and other land professionals and academics.

7.2. Crime and Personal Safety

Improving personal safety is a major thrust of the VPUU approach, and is an important metric in evaluating the development approach and consequently the attitudes to the CRS. In the interviews which explored which aspects were regarded as working well and which not, six households mentioned that there had been a reduction in crime since the VPUU intervention and the introduction of the Neighbourhood Watch and its security patrols. There was now a better relationship with the police. Participant #106 noted that prior to the creation of the Watch, the police had declined to arrest teenagers who had invaded her home and stabbed one of her family members during the robbery (Int #106). Eight households felt that crime remained a major problem and that they still did not feel safe despite the interventions. Three had experienced a home invasion or armed robbery and two had been burgled.

SANCO officeholders acknowledged that crime had dropped since the Neighbourhood Watch had been introduced. Crime, however, remained a problem, and they were aware of the limitations to what the Watch could achieve (Int #2019).

7.3. Hybrid Land Governance Dynamics

Monwabisi Park reveals how hybrid governance arrangements have distinctive challenges for the agencies involved, particularly in the light of the tendency for key role players in the respective organisations to change and with no built-in continuities as with bureaucratic institutions. There are no official structures to legally enforce the protocols, as they have no regulatory support, and there is no organisation that has the legal right to enforce them, other than the ALIU's powers to demolish 'illegal' shacks. Inevitably, some roles and positions become somewhat personalised or dependent on particular enabling factors. A change in leadership or management in any one of the participatory organisations can have a major impact on hybrid governance effectiveness.

The role and behaviour of the ALIU in enforcing the 'no new shacks' protocol were contentious. Some residents considered the ALIU role to be a positive element in developing durable solutions through partnerships with the CoCT, while others were critical or suspicious of the way the enforcement was carried out. Participant #114 was positive about the enforcement of the 'no new shacks' protocol, as it provided hope for development if further influx was prevented. In contrast, others' opinions were tainted by the perception that the ALIU officers were selective in which shacks they demolished, and that they did not enforce the protocols thoroughly or according to the rules. There were concerns that allowing more shacks would impede development (Int #107, 110, 112). Some respondents in the interviews alleged that in some cases particular officers received monetary considerations to ignore certain new illegal shacks. Allegations were also made in the household interviews of corruption among SANCO committee members, with reference to alleged 'committee shacks'. They alleged that some shacks had been erected because of patronage relationships or because the shack owners had paid off Area Committee members (or ALIU officers, as mentioned above). These shacks could be identified as they had no electricity boxes. Some community groups are alleged to have tried to demolish these shacks on occasion (Int #122, 123). Participant #122 was unhappy that there was no external organisation to monitor and evaluate the SANCO committees.

There is the ever-present threat that people with power in the community, including SANCO members, may accept illicit payment for new shacks to be erected or for ineligible people to be included in the CRS (Int #2018, 2019) [63]. In the workshop with the authors, SANCO members acknowledged that there had been a few problems among SANCO office holders but that these cases had been dealt with. Newspaper articles and interviews indicate also tensions within SANCO over the history of the settlement (Int #2019).

SANCO representatives and CRO volunteers in turn accused ALIU officials of corruption. They alleged that people had paid ALIU officials not to demolish their shacks (Int #2018, 2019) [64,65]. On the other hand, one SANCO officeholder claimed that he had had his shack demolished when all he had done was replace rusted corrugated iron sheeting that leaked in the rain, yet there were new shacks in the vicinity that were left untouched (Int #2018, 2019). In the broader context, a senior VPUU

staff member noted that allegations of corruption against the ALIU concerning selective demolition of shacks are common in many informal settlements in the city (Int #2002).

Our fieldwork confirmed the magnitude of the challenges that CBOs face. SNAC members indicated that SNAC does not enjoy universal legitimacy nor the power to enforce decisions. Some individuals and groups ignore them (Int #2013) but significantly, only a minority. A CRS manager estimated that 5% of households (identified as 'red roofs' on the digital map) are not recorded in the CRS and may not want to be on the system. He speculated that these households might believe that the CRS is not useful in terms of the indicators identified in Section 3 or alternatively that local Area Committees have not been sufficiently convincing to persuade them to register on the system (Int #2014).

Development delays have placed SNAC members and SANCO leaders under pressure [7]. SANCO officeholders and CRO volunteers noted that one of SANCO's major challenges was balancing the tensions between controlling influx by encouraging people to adhere to the protocols in order for development to occur on the one hand, and satisfying local demands to thereby maintain their legitimacy as elected officeholders, on the other (Int #2018, 2019). Resident interviews revealed that being involved in community affairs may put one at personal risk due to local political dynamics. One former committee member indicated that she and another woman in a leadership position had had notes slipped under their doors threatening them with death unless they "stopped what they were doing". She subsequently resigned from committee work (Int #107).

Hybrid governance relationships had changed as some role players had changed in each organisation. According to SANCO officeholders, the CoCT's recognition of SANCO's role in the hybrid governance arrangements changed over time according to the changing political and executive appointments in the CoCT—including the Mayor. The evidence from residents and community office holders indicates that they had begun to see a distinct change in attitudes towards local authority over time. They submitted that at one time, ALIU officials would consult SANCO before demolishing a shack and community leaders would report unauthorised shacks to the ALIU (Int #2013). Residents would approach their committee if they wanted to renovate their shack or build a new one. SANCO would write a letter to the local CoCT Human Settlements office indicating that a new shack or renovation of an existing shack was legitimate and generally this would be accepted. Confirming this, resident #101 said the ALIU had demolished her shack on more than one occasion when she had made extensions. When SANCO issued a letter on her behalf, the demolitions stopped. In SANCO's view, the situation had changed at the time of our field research, alleging that the CoCT tended to ignore them. In the different focus groups with members of SNAC, the CRO and SANCO, allegations emerged that the ALIU demolished shacks without consulting SANCO (Int #2019). These allegations of fluctuating recognition of CBOs in hybrid governance arrangements were not pursued in the research, as the focus of the study was on the design and implementation of the CRS.

Overall, there seemed to be acknowledgement that a key contributor to the positive developments in the institutional arrangements in Monwabisi Park was that there had been stability in SNAC and SANCO over the history of the development initiative. This was in spite of occasional tensions within SNAC and SANCO, and between SNAC, SANCO and VPUU (Int #2002, 2017, 2021).

Probing the level of trust in local organisations and VPUU further, residents were asked whom they might approach if they needed help in general. The responses were mixed. In the eight interviews in which the issue was explored, six households indicated that they would approach their local SANCO Area Committee. Some of them had done so in the past, with mixed results. One woman indicated that SANCO had helped her in reporting crime to the police. In contrast, another's experience was that the Area Committee could not help her after she had experienced a home invasion. One woman indicated that neighbours had helped her when all of her household goods had been stolen. One man had approached the VPUU CRO office when he had had a crime-related problem.

7.4. Transaction Strategy: Acquiring a Shack

Twenty-six resident interviews explored transaction strategies that shed light on how property is perceived, held and transmitted and how the CRS manages these ongoing changes in rights and the identities of rights holders. Among the early occupiers, one had approached a local leader in 1992 and bought a shack and then sold and bought another shack in 1996. In both transactions, delivery was effected orally in front of two witnesses. She did not go through any committees as they did not exist at the time. Nowadays, she would go through the committees (Int #111). One community leader had been part of the first organised invasion in 1997. She had been in leadership positions since the first invasion (Int #104). All of the other early occupiers had negotiated access to their land through local SANCO structures. One described how she had gone to a public meeting where the local CoCT councillor was present, and he had supported them in occupying the land (Int #106). One community leader compared her process of acquiring her right to build a shack to the customary system where she came from in the Eastern Cape, where one would approach an *Isibonda* (isiXhosa for 'headman') who took you to the Chief in order to be allocated land (Int #2020).

It was clear from the interviews that it is very difficult to buy a shack in Monwabisi Park without the involvement of the SANCO committees. These issues relate to the 'Designed Transacting and Defending Strategy System', which is one of the primary reference points to evaluate effectiveness (see Figure 2). Among 13 residents who were shack owners by dint of buying a shack, the processes they reported made it clear that they accepted that they had to work through the committees and therefore the protocols. Many of the early buyers moved into Monwabisi Park and stayed with family members until they became known, following which the Committee would approve the transaction. Later arrivals bought outright without having to stay with family providing they followed procedures. Participant #113 noted that she felt the necessity to get to know the committees and attend their meetings for a few weeks, presumably while they assessed her and did background checks. In her case, her purchase was dependent on a committee member witnessing the transaction.

7.5. Defending Tenure and Knowledge and Usefulness of CRS

The interviewees' understanding of the CRS and the documents was far better than knowledge that rights holders had of registration procedures in state-subsidised housing projects with registered tenure in cases where the authors have studied the effectiveness of land registration in the Western Cape. In all 24 interviews regarding how they would defend their tenure in the event that someone attempted to evict them, or produced a fraudulent document in an attempt to claim their shack, the respondents indicated that their Certificate of Tenure and/or a Letter of Residence were their evidence, and they would approach the CRO. Five mentioned that they would also work through the Committees, implying it would likely be very difficult to deal with such a situation without working through the committees.

Four participants explicitly mentioned that they had electricity as proof or evidence, and many more had mentioned electrification as one of the most positive developmental elements of the settlement, and either explicitly or implicitly regarded it as a major contributor to tenure security. This corroborates senior officials' and VPUU staffers' assertion that electricity strengthens tenure security (Int #2002, 2003, 2014). SANCO members noted that the electric wires and the ESKOM number stencilled on the shack was a key indicator to the ALIU of the legitimacy or 'illegality' of a shack (Int #2019). Electrification constituted a means of influx control and was a mechanism for SANCO (and the ALIU) to regulate influx, given that it was not easy to get an ESKOM number for an unauthorised shack (Int #2014).

There were different beliefs about the status of the Certificate of Tenure versus a registered title deed. Ten participants believed that the Certificate was like a title (*ityatile* in isiXhosa). In contrast, three participants said they would prefer a (registered) title deed, as they felt that the Certificate of Tenure did not provide the same level of security (which is legally correct as the Certificates only recognise an occupation interest as opposed to ownership). A key-informant noted that the tenure

certificates had been a catalyst for people to sell their shacks. They (supposedly) thought these were the same as a title (Int #2017).

There had been some problems related to tenure security similar to those the authors have observed in other projects. One cause of disputes is people selling privately without involving the CRO or the committees. The seller then returns and reclaims the shack. In other cases, families have appointed a caretaker to look after the house when they visit family in the Eastern Cape. The caretaker then sells the house, claiming to be the owner (Int #109). A typical case that the CRO encountered was when a tenant (e.g., a shack owner's partner), who was in the house when enumeration occurred, was recorded as the owner instead of the owner who might have been at work. The Certificate of Tenure was registered in the tenant's name and later the certificate had to be rectified. CRO staff spent a significant amount of time correcting this type of data (Int #2014, 2018). Another type of case was of people selling without informing the Area Committee. Subsequently the buyer attempted to record the sale at the CRO, by which time the seller may have left. In those cases, the CRO staff had been reluctant to record the transaction without the sale being verified by the Area Committee (Int #2018).

8. Discussion

We analyse the different systems that influence LTIS effectiveness and the Monwabisi CRS effectiveness itself using the framework in Section 3 to structure the discussion. The analysis is based on prior research in Monwabisi Park, the case history, software demonstrations, key-person and resident interviews and group discussions with CRO staff, SNAC and SNACO representatives.

Moving from left to right across the analysis framework represented in Figure 2 above, we start by analysing the general antecedents to LTIS effectiveness, the External System and the Local Social-Political-Economic System. We discuss hybrid governance and organisational culture in this context, as they influence and are influenced by the various sub-systems in the Local Social-Political-Economic System, which in turn are antecedent to a functioning Usefulness System and a Designed Transacting and Defending Strategy System that residents use. We then discuss the resident interview results along with the group session results from CRO staff, SANCO representatives and SNAC representatives in the context of the Usefulness System and the strategies that residents had used or intended to use to defend their occupation and to transact in land interests.

8.1. External System

The External System comprises a range of factors that generally cannot be controlled in the context of the CRS. The lack of a legal framework to accommodate VPUU's *in situ* incremental development approach was a major constraint on Monwabisi Park's development. The project commenced in the hope that consensus might be reached within the state planning and administration system and that policy and law would follow to facilitate the *in situ* incremental development approach. This remains unresolved. The risks of proceeding with participatory development planning without a clear planning and regulatory framework to accommodate a community-driven planning process and *in situ* upgrading is apparent in the Monwabisi Park case. Government systems are not designed to change policy and legislation relating to planning and tenure administration quickly. Consequently, the level of development that some residents had anticipated had not materialised.

The slow pace of, or stalled, development measured against residents' expectations has led to high levels of anger and frustration. These residents did not necessarily separate their frustration with the development and the CRO, and consequently the CRS. For some residents, the VPUU intervention raised false expectations, such as being granted housing similar to existing state-subsidised housing projects. CoCT officials had raised this as a concern [19]. It is plausible that VPUU's messages about the objectives and risks of the intervention might not have been communicated to Monwabisi Park residents in the way senior VPUU staffers had hoped. VPUU's documentation indicates that they did not promise houses when they became involved in Monwabisi Park [7]. Alternatively, some residents interpreted the messages differently from what VPUU staffers had intended.

These tensions should be expected when participatory planning is conducted under the hybrid governance arrangements, given the different organisations and organisational cultures, competing agendas among different agents and agencies and competition for power in local politics.

Stalled development has major implications for the duration of a CRS and the ongoing commitment by an NGO supporting it. Had development occurred, VPUU might have completed their work and the CRS role as a LTIS taken over by a state organisation. Instead, VPUU is dealing with a CRS that requires a long-term commitment as an ongoing concern.

8.2. Local Social-Political-Economic System

The sub-systems in the Local Social-Political-Economic system as depicted in Figure 2 were functioning well. The institutional arrangements are well established and generally accepted, and residents understand the protocols. In addition, the protocols address the needs of vulnerable members of the settlement. We did not find evidence of vulnerable people being deprived of their land interests or deprived of access to the CRS if they adhered to the protocols. Moreover, no evidence emerged of membership of a political party or affiliation to a particular faction affecting access to the CRS.

The agencies VPUU, SNAC, SANCO and the CRS have performed as well as might be expected as evidenced by the resident interviews. The research did not include the workings of the ALIU, as the study was focused on the dynamics of the internal role players, but we acknowledge where these are affected by external agencies and influences.

CBOs and their members, who are the community-level hybrid governance partners, face a number of challenges. The SNAC meetings revealed that SNAC does not enjoy universal legitimacy, and as an unofficial organisation, it has limited power in enforcing decisions. SANCO members mentioned the difficulties in balancing the need to maintain the protocols and demands from members in the community and hopeful applicants for a new shack to circumvent them. What has not occurred are major rifts in SANCO or SNAC which might impact tenure administration, the durability of the protocols and the CRS as a whole. SNAC and SANCO had been stable. The advantage of SANCO being a national CSO are the standard codes of conduct and standards for election of office bearers. There are ongoing risks that disruptive schisms could occur and the protocols could be ignored or manipulated as part of this process, especially when major change occurs, such as the potential offer of houses leading to the exclusion of some from benefitting. As we have observed elsewhere, SANCO is vulnerable to rifts linked to national or regional politics leading to potential evictions as a consequence [5]. Development in Monwabisi Park may also be a catalyst for land invasions by people hoping to benefit from the proposed development [3].

The ALIU's role in enforcing the 'no new shacks' protocol is an essential and practical element of the internal functioning. The no-new-shacks protocol is nevertheless controversial as pioneers and early settlers were able to invade the land while newcomers attempting to occupy land in Monwabisi Park have their shacks demolished in terms of the local organisational rules. CBO members cannot demolish shacks or evict people, as this would unsettle local accountability. The ALIU role also helps to provide official legitimisation of the existing occupiers' rights.

In general, residents trusted the different agencies, VPUU, CRS staff, SNAC and SANCO and the leadership in the different CBOs. Allegations of corruption were levelled at both SANCO and ALIU officials. These accusations are to be expected in local politics, and we did not attempt to verify or refute them as part of the research. The fieldwork indicates that tensions and perhaps the occasional aberration in applying the protocols have not had a major adverse impact on the CRS effectiveness.

It is worth noting that the CRO, the operational interface of the CRS, was established in Monwabisi Park six years after VPUU had become involved. A great deal of organisational development, institution building and leadership training had occurred as part of the participatory planning system before the CRO was constructed and staffed in 2015. It is likely that VPUU regarded the situation as sufficiently stable to implement this step in the development process. This was the same year the community agreed upon the written protocols.

8.3. Hybrid Governance

The primary focus of the case study was the CRS effectiveness and the manner in which it was achieved. Hybrid governance is a key analytical concept, as it captures the institutional environment, which is arguably the most important contextual issue framing the Local Social-Political Economic System.

The authors' experience of other case studies informed our analysis of this case. The hybrid governance arrangements involving the CBOs, SNAC and SANCO, VPUU and the CoCT were working better than might be expected. In general, residents trusted them. By extension, the CRS was functioning well.

That conclusion should not be interpreted to mean the absence of tensions between the key role players and within the organisations. SANCO noted the fluctuating level of recognition that they received from CoCT departments. This is, however, to be expected. In Monwabisi Park, there is more harmony than is common in many informal settlements, in part, we feel, due to the constant organisational development, institution building, leadership training initiatives which addressed the sub-systems in Local Social-Political-Economic System and the participatory planning approach undertaken by VPUU. The situation is nevertheless fragile, and there is the ever-present risk that one or more of the CBOs might become unstable, which would destabilise the entire development initiative; setting it back or even stalling it, in which case the CRS would be critically affected, possibly to the point of non-functionality.

8.4. Organisational Culture and CRS Development Strategy

The Monwabisi Park case suggests that a successful development program and effective CRS in a complex environment such as informal settlements are likely to be characterised by continual adaptation and ongoing liaison and communication between different actors and agencies. The key institutions that define the CRS form, role and functions at a particular time, and in general what it can and cannot do, are constantly negotiated.

VPUU's approach to the CRS planning and development matches what might be described as an adhocracy culture. In Monwabisi Park, VPUU, an external agent, adopted an ad hoc approach to information system design and implementation in response to needs assessment arising from negotiations with an organisation imbued with a political culture. The VPUU approach recognises that problem solving has to be comprehensive and systemic.

According to a VPUU CRS manager, the CRS in Monwabisi Park developed and evolved in response to planning and administration needs as each situation in the development process unfolded. It was part of the overall approach to participatory development planning. When applied to information systems design and development, an evolutionary approach carries an expectation of change, which is likely to unfold in unpredictable ways over time. Rigorous procedures are kept to a minimum. This approach is suited to the complexity of Monwabisi Park. It is particularly relevant when there is a mix of an adhocracy approach, as adopted by the VPUU CRS development team, and a political culture among SANCO and SNAC structures.

There are significant lessons for land records development and management, particularly in the context of the international push to adopt standards as a starting point in land tenure information system (LTIS) development. Under hybrid governance, the organisational cultures of the organisations involved in developing the CRS may not lend themselves to standards and formulaic procedures as a starting point to developing such a system. VPUU did not do this either.

It is nevertheless advisable for international standards to be examined and, if relevant, applied at some stage as the system evolves and certain characteristics of the system become settled. It is important to keep the long-term trajectory of the information system as an ongoing concern in mind and avoid the possibility of a design that could evolve into a dead end, where the information system cannot be harmonised and integrated with similar information systems over time. In the case of Monwabisi Park, the CRS has a very simple data structure, and hence, transforming it into a different

data structure and renaming entities to fit international or national standards should not be a major technical challenge.

8.5. Usefulness System

Measured by community satisfaction, actual usage of the CRS and stated intentions to use it, we found the CRS to be effective. The resident interviews suggest they have used it or intend to use. Moreover, no tenure securing strategies that contrast with the CRS have gained traction. The rough estimate of 5% of 6900 households which had not recorded their details in the CRS is arguably far better than can be expected in a situation where participation is voluntary given the complex problem context.

The CRS software functionality addresses the immediate needs of a system of land tenure certification that is current and accurate. However, there is a range of activities and outputs associated with the CRS that strengthen the perception of usefulness and its actual usefulness. The associated artefacts, the Certificates of Tenure and the Letters of Residence, have contributed to a major improvement in both perceived and actual tenure security. The Letters maintain the currency of the records in the face of the CoCT's reluctance to issue updated Certificates. The Certificates and Letters also add a form of data security in that they provide hard-copy backups of the records in the event a disaster should befall the digital records or the CRO or should VPUU withdraw support for the CRS.

The software functionality addresses tenure needs and, importantly, other settlement administration issues, which enhance perceptions of usefulness. In addition, there is a strong link between development planning, administration and maintenance of infrastructure and the CRS, which arguably strengthens residents' perceptions of CRS/CRO usefulness. In addition to administering tenure, the GIS was used to generate participatory development plans and administer the ongoing maintenance of infrastructure. The tap and toilet maintenance system is a visible, tangible benefit of the CRS. Interviews show that household electrification was a major improvement in quality of life. Tying the provision of electricity to the CRS has arguably enhanced both the perception of tenure security and actual tenure security. It is highly unlikely that the CoCT would arbitrarily evict a household that had (a) followed the community protocols, (b) whose shack had the correct numbers stencilled on them and (c) the shack had access to electricity. Another factor that strengthened perceptions of usefulness was that the CRO was also a one-stop shop for other community development and welfare project administration mentioned above. In Monwabisi Park, this perception is connected with other planning and administration functions, which together arguably develop a general belief among residents that the CRS is useful when choosing a tenure administration strategy.

The second element identified in the Usefulness System is accessibility. The CRO is accessible to residents, as it is housed within Monwabisi Park and within walking distance for healthy individuals. For operators, the software is easy to use. The level of service also makes the office accessible to residents, as it appears transaction and recording processes are efficient. None of the residents mentioned delays or other activities that might impede the issue of a Letter of Residence, providing residents comply with the protocols. VPUU provided the resources to run the system and therefore maintain its accessibility. If local politics remain stable, especially SNAC and SANCO politics, and VPUU remains engaged and continues to receive funding for Monwabisi Park, the CRS should remain accessible to residents.

Another effective method of gaining legitimacy was that the generation of local protocols by local representatives directly took into account local social norms. The key-informant interviews, SANCO group session, the CRO session, SNAC meetings and resident interviews suggest that the protocols were, at the time of the research, working well and that adhering to them was accepted normative behaviour. It did not appear to be possible to get a transaction recorded in the CRS, and therefore for a buyer to be issued a Letter of Residence, without the local SANCO Area Committee's involvement.

In reality, the community-level protocols have led to bureaucratic-like procedures over time, which are similar to those in the deeds registration process. Problems, however, are likely to be

resolved through negotiation rather than expensive rigid legal procedures. The requirement that Area Committees verify sales is an interesting phenomenon as the process parallels certain procedures required to transact through the deeds office. Committees verify that the seller is empowered to alienate a shack and the purchaser has the right to purchase it. It is important to note that when transactions have not proceeded through the committees, they may not be recorded in the CRS if the seller cannot be traced. Similar problems have been observed in state-subsidised housing projects where land is held under registered title deeds [5,10,66].

According to the criteria in the 'Control and Enabling Systems' identified in the framework, one enabling factor is the cost considerations of using the system. Recording of both owner details and transaction details are free to residents. Since cost is not a consideration, it is therefore not a control factor. The CRS equipment and facilities were provided by VPUU, and they paid the operators. None of the participants in the study mentioned factors that impede a person from recording their details or a transaction in the CRS. There might well be powerful factions that influence this among the 5% of unregistered 'red roofs', but evidence of this did not emerge.

Residents' knowledge and understanding of the procedures they had to follow to effect a transaction or defend their tenure is an important antecedent of their perceptions of usefulness of the Transacting and Defending Strategy System. The resident interviews revealed that Monwabisi Park residents had a better understanding of these procedures than residents did in any state-subsidised housing project that the authors have studied where the land is held under registered title [5,10,66]. Residents clearly understood the protocols, the Certificates of Tenure and Letters of Residence. The field work suggests that residents' high level of knowledge and understanding of the system can be attributed to neighbourhood Area Committees being engaged and accessible, the continual meetings and other communication activities, the participatory planning approach, volunteers managing the CRO operations as opposed to outside people, and the ongoing organisational development and leadership training provided by VPUU.

8.6. Transacting and Defending Strategy System

The 'designed transacting and defending strategy system' observed in the Monwabisi Park CRS is arguably more effective than can be expected in a large informal settlement. As the resident and key-person interviews indicate, in spite of dissatisfaction among some residents with the overall development progress, people had used or intended to use the CRS, and they adhere to the protocols (and therefore the negotiated social norms). No alternative strategies to achieve similar ends were raised in preference to the CRS.

The degree of effectiveness of this strategy system as evidenced by adherence to it by most residents is remarkable, given it is a hybrid governance arrangement where the CoCT has largely adopted a hands-off approach to the CRS, other than issuing the original Certificates of Tenure. The effectiveness is also remarkable, given the many factors discussed above, such as the diverse organisational cultures among the different agencies; the local level political dynamics; expectations of housing and development that are difficult to fulfil with consequent frustration and anger; and a regulatory framework does not cater for the *in situ* incremental development planning approach.

9. Conclusions

The analytical framework proved to be a useful tool in structuring and analysing the data for purposes of evaluating a land tenure information system (LTIS), providing additional factors such as hybrid governance and organisational culture are correctly identified and analysed in a LTIS evaluation. In general, the framework serves as a tool to design and implement a LTIS and evaluate and monitor the many issues that require day-to-day management and negotiation over a long time span if a LTIS is to operate as an ongoing concern. It also informs the choice of suitable LTIS design and implementation strategy, i.e., top-down, bottom-up or evolutionary.

Our evaluation is that the Monwabisi Park CRS is effective, primarily because residents use it, and in general, they hold positive attitudes to it. While there are frustrations with the slow pace of development, no alternative strategies for land tenure administration were proposed during the study. Unlike many land certification programmes, the records system was a thread in a broader canvas, rather than a standalone project aimed purely at experimenting with tenure security or land tenure information systems. The VPUU approach was comprehensive, systemic and oriented to overall development, and the participatory planning outcomes addressed all the sub-systems that are controllable.

The CRS design and implementation process can be likened to that of a corporate information system evolutionary approach to information system development where an adhocracy culture predominates. The Monwabisi Park CRS differs from a commercial corporation in that there is a mix of adhocracy and political cultures in the organisations or parts of organisations involved in the process.

Importantly, the CRS is community-operated, with management support, resources and guidance from VPUU. It is also simple and easy to use. It also served a range of administration activities beyond tenure administration. These factors arguably contribute to residents using the CRS and consequently the data are both current and accurate. The sub-systems that are antecedent to residents adopting particular transaction securing strategies may seem obvious to a person planning a participatory planning and development project using an incremental, constant negotiation approach. However, in the authors' observation, few LTISs are designed and managed this way, with the result that they can fall into disuse or lose currency very quickly.

The evolutionary approach to developing the CRS in Monwabisi Park is instructive. For VPUU, the emphasis was always on what emerged from participatory processes and what needed to be done to address those needs in the CRS technical implementation model. This is contrary to an approach that attempts to apply international standards at the outset. There is nevertheless a tension and there are trade-offs between a design that accommodates partners' expressed needs and wants on the one hand, and a design that forces people to adapt their behaviour and beliefs to that design on the other. Aspects of the latter design approach may be critical in creating CRSs that can be replicated across different development projects.

The research provided abundant evidence that the effort to create and sustain the Monwabisi Park CRS has been significant. VPUU has provided professional expertise, buildings, computer hardware and software, finance and ongoing training. The CRO was only created in Monwabisi Park six years after the start of the participatory planning initiative, once a history of organisational development, institution building and leadership training activities had established durable institutions. The Monwabisi Park case demonstrates that constructing systems of records in informal settlements requires an enormous amount of investment in designing and sustaining an LTIS that local people can operate. We did not explore the monetary cost of VPUU's intervention, but costs are significant both financially and in terms of the time commitments by land professionals and IT professionals. The challenge is to be able to replicate it at scale and at reasonable cost.

The case threw up how, in a hybrid governance environment, an intermediary managed the participatory planning, the ongoing negotiations, training and the CRS development processes, not a state organisation. The Monwabisi case reinforces the notion that there are diverse views on how things should be done and arguably toward hybrid governance arrangements within state authorities such as the CoCT. In addition, there are personal risks to officials if they do become involved in such a project, and it does not produce the outcomes that state planning authorities envisage.

If such a CRS initiative is to be replicated, an intermediary driving the process should consider that the costs, level of commitment and time to such an initiative may be much greater than might be envisaged at the outset. The trajectory of the records and the impact on the form of tenure that might materialise should also be considered. The CRS has not been in operation long enough to chart its trajectory into national land governance policies, nor its potential replication in Cape Town urban settlements. It does, however, reveal a great deal about how to address the challenges of local land

tenure institutions, incremental tenure and informal settlement development strategies in creating a working CRS under hybrid governance arrangements.

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