

# Laying the Foundation for a Resilient Partnership: Innovative Upgrading in the Informal Settlement of Langrug



*An Interactive Qualifying Project to be submitted to the faculty of Worcester Polytechnic Institute in partial fulfillment of the requirements for the Degree of Bachelor Science.*

## Abstract

The upgrading of informal settlements in South Africa is a vital yet challenging process requiring persistent multi-stakeholder involvement. The goal of this project was to strengthen the partnership between the informal community of Langrug, the Municipality of Stellenbosch, and our NGO, the Community Organisation Resource Centre (CORC), through innovative, community-driven upgrading projects. Through intensive collaboration, we assisted with initial reblocking efforts, finalised designs and plans for the implementation of a community centre, improved upon current greywater management processes, and designed and began construction of an innovative, communal Water, Sanitation, and Hygiene (WaSH) facility. These projects strengthened community capacity and exemplified the benefits that meaningful partnerships can bring to South Africa's poorest communities.

*This project summary is part of an ongoing research programme by students and faculty of the WPI Cape Town Project Centre to explore and develop with local partners options for sustainable community development in South Africa.*

*For our full project report: <http://wp.wpi.edu/capetown/homepage/projects/p2012/langrug/>*

*For more about the Cape Town Project Centre: <http://wp.wpi.edu/capetown/>*

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# Introduction

Our Langrug Project Team had the opportunity to work alongside a unique and capable informal settlement partnership in Franschhoek, South Africa as they sought to implement community-driven upgrading initiatives. We were met with many unanticipated challenges: social tensions, cultural differences, and varying degrees of commitment that threatened to overcome the ambition of all of the stakeholders. However, through building relationships, improving communication, and persevering together, we collectively overcame these obstacles

and built Phase I of an innovative water and sanitation facility in only a few short weeks.

## Setting the Stage

The apartheid regime (1948-1994) in South Africa largely restricted black South Africans to living in impoverished townships that offered little opportunity for socio-cultural or economic advancement. Many blacks moved to the Cape Town area in search of work, and the apartheid regime responded to this population influx by forcing them to reside in shanty towns outside the city. Following apartheid’s dismantlement, black

South Africans continued to settle around Cape Town on private or government-owned land. These informal settlements (or “squatter camps”) are made up of shacks and rudimentary water and sanitation facilities (Hunter 2012). The haphazard nature of settlements complicates efforts aimed at addressing the built environment as well as “poverty, crime and inadequate provision of health, education and social welfare” (Jiusto & Hersh 2009). Despite these challenges, informal settlements often have a unique and promising vitality. The perseverance, hope, and vibrancy of community members not only inspire but also carry these upgrading projects to their completion.

## Informal Settlement

### Upgrading

Local municipalities, funded under the federal government’s housing policy, have attempted to meet the needs of informal settlement communities for housing and basic infrastructural and social services, but they have struggled to find the strategies and financial resources needed to support truly effective, sustainable community development (Bradlow 2011). Many past initiatives have proven unsuccessful in the long run due to the lack of community and NGO involvement. This is especially apparent among water and sanitation facilities implemented in informal settlements. When the community is not involved, the sustainabil-

ity is jeopardised which adds to the ongoing public health and social crisis instead of helping the situation (Manikutty 1998). This lack of community involvement contributes to disempowerment of communities who tend to rely on the government rather than fending for themselves. A new strategy is currently underway in Langrug, a small informal settlement in the Municipality of Stellenbosch.

Table 1: Project partners

The Langrug Working Team
Community Organisation Resource Centre (CORC)
Informal Settlement Network (ISN)
Shack Dwellers International (SDI)
Municipality of Stellenbosch (MoS)
Worcester Polytechnic Institute (WPI)

## A Unique Partnership

In 2011, an unprecedented Memorandum of Understanding was signed between the Municipality, the NGO’s SDI/CORC, and the Langrug community. CORC is a subdivision of SDI that specialises in working with informal settlements to support community-driven upgrading processes. This was the first instance in the country where a community-based, model partnership was formally agreed upon (Vandenberg 2011). This partnership received national attention at the 2012 South African Planning Institute Conference where the partnership won an award in the Community Outreach category



Figure 1: A view down Langrug’s main road



(Mxobo 2012). This praise was largely due to the establishment of the Langrug Working Team, where various community leaders are actively involved in Langrug's upgrading alongside the Municipality and CORC. Starting in 2011, WPI has had the opportunity to work with this unique partnership. While the partnership model for community leadership has many benefits, there also exists complex sociocultural dynamics that present both opportunities and challenges.

## Challenges within the Partnership

According to various newspaper articles and reports from last year's WPI Langrug teams, Langrug was moving forward and making great strides in community-driven upgrading alongside a strong partnership (Vandenberg 2011; Kenney, et al. 2011). Because of this, we anticipated working with a motivated, proactive community with the support of the Municipality and CORC. Upon arriving in Langrug, however, we found ourselves in the midst of a tense social dynamic in a partnership that had inadvertently lost momentum.

The Working Team leaders vehemently expressed their discontent with the current status of the partnership, and the Municipality was in turn frustrated with inconsistent communication and the community's constant demands. Each partner had



Figure 2: A partnership meeting in Langrug

different impressions regarding the necessary steps to move projects forward as well as varying expectations for WPI's seven week projects, and certain key leaders were on leave, hampering partnership capacity and decision-making. Most fundamentally, CORC and the Municipality are both extremely capable yet also stretched very thin, with few people and resources available to bring their critical contributions to the many communities in which they work.

## WPI's Opportunity

It appeared to us that all of the pieces for a strong partnership were present, but something was preventing those pieces from coming together. Underlying communication issues hindered project progress and community satisfaction. In realising that the partners were struggling to maintain momentum, we saw an opportunity to help fortify the partnership through proactive planning and participation in various upgrading projects. All agreed working hand-in-hand could serve as a spark to reignite community-driven upgrading in Langrug,

while we also learned from our local colleagues. We managed to produce significant planning documents for several projects, and our work culminated in the physical construction of an innovative water, sanitation and hygiene (WaSH) facility and the realisation of the potential of the partnership.

## Key Outcomes

Below is a list of achievements resulting from the various projects that we collaboratively developed:

- **WaSH Facility:** Designed /completed Phase I construction, left plans for future phases
- **Multi-Purpose Centre:** Prepared proposal including design and cost estimate
- **Greywater Health and Maintenance:** Provided equipment and maintenance strategy
- **Reblocking:** Began guidebook and revised F-section layout
- **Communication:** Improved communication and working dynamics between all partners
- **Reporting:** Developed Working Team reporting and documentation skills
- **Website:** Created a website with an extensive narrative describing and reflecting on our IQP experience

## Shared Action Learning

A unique approach, known as Shared Action Learning, was used throughout our entire

project to help us connect and collaborate as a group as well as plan and accomplish achievable goals. This approach was drawn from an action research methodology created specifically for the Cape Town Project Centre. It focuses on the sharing of ideas, knowledge, resources, and inspiration among all project partners rather than the idea of us as outsiders "educating" the community (Jiusto, Hersh & Taylor 2011). Using Shared Action Learning helped us to build a respectful and cooperative learning environment while allowing the formation of sustainable relationships. Through continuous cycles of observation, planning, acting, and reflecting, we collaboratively dealt with many of the dynamics discussed throughout this summary.



Figure 3: Juan and Kholeka discussing plans

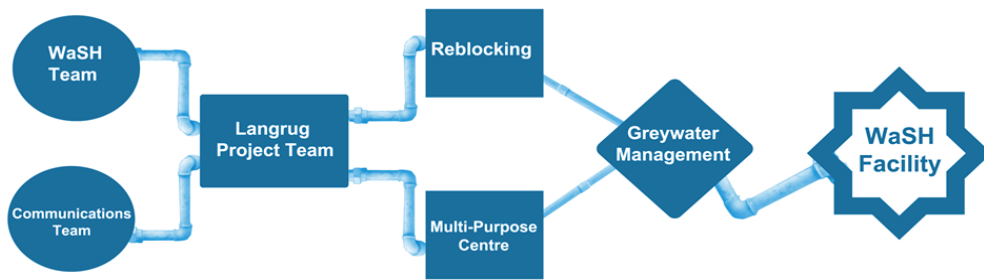


Figure 4: Evolution of the Langrug team

## Evolution of the Langrug Team

The 2012 Langrug project was the result of a merger between two discrete teams, WaSH and Communications, which were formed during the preparatory term. The Communications team planned to aid in strengthening the Langrug partnership and the internal Working Team relationships through Shared Action Learning and team-building activities. The WaSH team planned to design either a multi-purpose WaSH centre or a small WaSH station in a reblocked area of Langrug, building off of the work of previous Cape Town Project Centre teams, most notably the 2011 WaSHUp project. Both teams also emphasised the importance of community involvement and multi-stakeholder cooperation in informal settlement upgrading.

Upon arrival in Langrug, however, it became apparent that our time would be best spent working as one unified group. The first meeting we had with the partnership

demonstrated Langrug's urgent need for some sort of physical implementation and improved communication. The partnership had reached an impasse and was struggling to move forward. It appeared as if nothing could be implemented unless the partnership was fortified, while the partnership could not be strengthened without something physical being implemented. These two issues were not dichotomous, as was previously thought, but were intertwined and dependent on one another. Observing these complicated realities solidified the need to refocus and reorganise into one motivated team, combining the knowledge of both teams with that of the Working Team members.

## Primary Project Focuses

To move forward, we planned a number of projects that were deemed a priority by the community.

## Reblocking

Informal settlements often grow in a disorganised manner. New settlers must locate and erect their shacks as fast as possible in whatever open space is available in order to avoid eviction. This haphazard process often ignores accessibility to services and safety considerations (Gasparre 2011). Many solutions to this problem have been attempted, but recent work by CORC and their partners



Figure 5: Working on plans for reblocking

in South Africa has shown promise in the development of an upgrading model known as reblocking. These communities are found to be more dignified and safe living environments where groups of shacks are clustered together into blocks sharing a common entrance and a courtyard-like area. Each home faces the courtyard where a single entrance ensures that no unwanted individual can intrude on the block. Additionally, reblocking projects rebuild improvised shacks with sturdier materials that can withstand fires and stormy weather. All of these improve-

ments generally come with a necessary financial contribution from the community.

## Planning with the Langrug Working Team

After exploring the proposed reblocking project in Langrug, we discovered significant technical and financial issues with the community-developed planning process and documents. The plans for the reblocked cluster showed inaccurate scaling and measurements and did not include a cost breakdown. We decided to obtain new measurements and double-check the information on F-section residents with the Working Team.



Figure 6: Reblocked F-Section Cluster 1

To assist the community, we broke down the reblocking process into three aspects shown in Figure 7.



Figure 7: Reblocking project focus

After explaining the importance of accurate data collection to the Working Team, they were able to better understand the Municipality's concerns regarding the readiness of the community to reblock and were able to move forward with the planning process. As this work progressed, a guidebook was developed to introduce a systematic approach to the previously undocumented reblocking process.

## Multi-Purpose Centre

During our initial meetings, the Working Team expressed high priority in the implementation of a multi-purpose centre (MPC). An MPC is a facility designed to provide the community with space for a variety of activities and services. The proposed facility in

Langrug would include features that would benefit the entire community.

## Importance of Implementation

The implementation of an MPC by the Municipality was anticipated by the Langrug community for the past two years. The Working Team reported being under immense pressure to begin construction as soon as possible due to the community's deteriorating confidence in the partnership. Therefore, we felt that building an MPC would help to restore trust by demonstrating the capabilities of cooperation within the partnership. Realising this potential, we collectively agreed that the MPC would be our major focus with the hope of con-

structing the facility during our time in Langrug.

## Assessment of Needs

A major issue that has led to the failure of past initiatives within informal settlements stems from placing the goals of the provider before the wants of the community (Schouten 2010). Fully aware of this, we began by discussing Langrug's needs with the Working Team in order to plan how this facility could best address these issues. The Working Team had already collected data on problems within the community, most of

which fell into four main categories held as a priority by the Municipality: health, education, safety, and socioeconomic development. A proposal was then drafted to present to the Municipality which satisfied their four major concerns.

### Elements of the MPC

- Mobile clinic
- Space for HIV/AIDS support group
- Soup kitchen
- Reading room/library
- Crèche
- Adult education classrooms
- Office for community leaders
- Spaces for small shops
- WaSH facility

This proposal not only outlined the need for the MPC to all of the partners but also helped the Working Team realise the importance of documentation. Keeping stakeholders continuously informed regarding new developments or considerations about a project is a vital aspect among multiple-stakeholder partnerships (Gerrits 2004). Helping the Working Team develop these skills was an important goal of our project as it fostered better communication within the partnership. Therefore, we hope that they will continue to utilise these skills as Langrug's upgrading progresses.

## MPC Technical Designs

Following this conceptual assessment, we shifted our attention to the design of the



Figure 8: MPC layout with WaSH area





Figure 9: Working on designs for the MPC

facility. While CORC and the Working Team had an existing design based on community input, we collectively agreed that a simplified version would expedite the implementation process. Although this simplified version was smaller than previous models, the MPC would provide sufficient space for all the key elements which had been outlined. The structure would resemble a pole barn with a sturdy, walkable roof to increase communal space. Safety was a major concern so we worked with a building inspector to ensure the Municipality's approval. A SolidWorks design was drafted to assist with the creation of a cost analysis and building timeline. One challenge we encountered was the cultural differences in work habits and construction techniques. Therefore, an important part in creating the building timeline involved discussing the plans with members of the Langrug Working Team, CORC, and the Municipality to gain insight into the local construction techniques.

## Community Approval

Community involvement during informal settlement upgrading projects has proven to be an effective way of building sustainable projects (Manikutty 1997). Although the Working Team had collaborated significantly with the community in planning the MPC over the past two years, we felt that it was important to show the current iteration of the design. The Working Team held a community general meeting where they explained the designs and walked around the community gathering signatures to represent residents' approval of the project.

## Challenges of the Funding Agreement

With the design process and approval stages nearly complete, we began to discuss

the cost share agreement for the funding of the MPC in terms of immediate construction and long-term management options. CORC was willing to share a large percentage of the cost but required a community contribution in order to draw funds from CUFF (Community Upgrading Finance Facility). WPI was willing to cover the remaining construction expenses, while the Municipality agreed to fund the long-term maintenance and management of the facility.

The Working Team, however, foresaw a significant challenge in the collection of the required community contribution due to the community's previous understanding that the Municipality would fund the entire project. Without their contribution, CORC would be unable to fund their share, which

meant that WPI would also be unwilling to contribute without full commitment of the partnership. As a result, the project stalled, although the project is expected to move forward early in 2013, using the designs and plans we collectively prepared.



Figure 11: Steps necessary for the implementation of the MPC. Last two steps remain to be completed

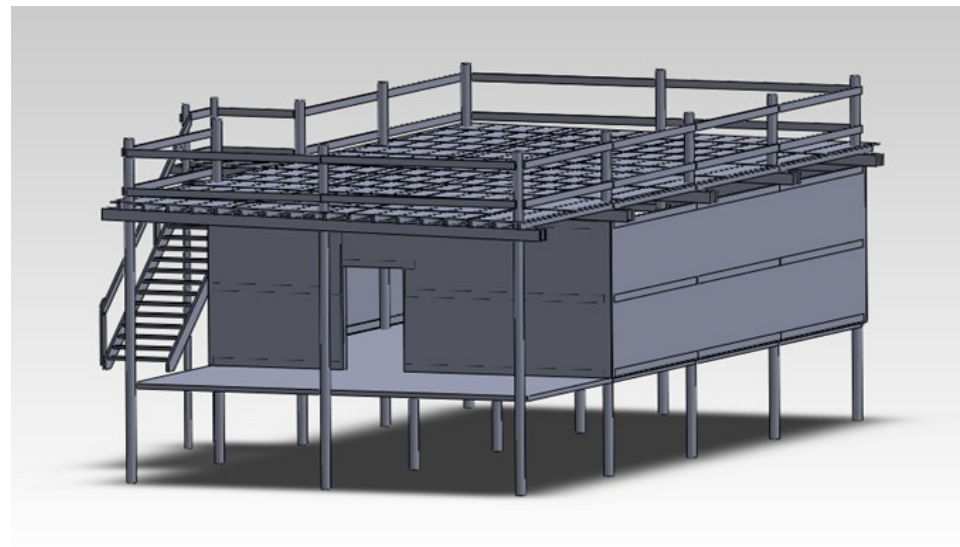


Figure 10: MPC design

## Greywater Health and Maintenance

While waiting for the MPC to move into the implementation phase, we engaged the Working Team in a discussion about the greywater channels. Governmental funding provides the Working Team with a stipend for this task, but the Municipality had recently expressed frustration over the inconsistent cleaning. We discovered that the team had not been fulfilling this daily duty

because of health concerns, including rashes and the risk of bacterial infections, resulting from their lack of protective gear. We approached the Municipality with this issue and discovered that though the Working Team felt they had expressed their concerns, the Municipality was unaware of the problem.

Boots, gloves, and facemasks were subsequently purchased for each team member. This simple remedy highlighted how the partnership could be improved if communication and reporting were more frequent and direct. We also worked with the team to develop a cleaning schedule, tool maintenance procedure, and a personal hygiene checklist. This provided an opportunity for the Working Team to develop reporting



Figure 13: The Working Team with their new cleaning gear

skills and also demonstrated the team's interest in personal sanitation.

## WaSH Facility

### Decision to Implement

Following the unfortunate realisation that we would not be able to move forward with the implementation of the MPC, we reached a turning point in our project. With only two weeks left, we needed a focus for the remainder of our stay. After discussing various options with the Working Team, CORC, and the Municipality, we decided that our time would be best spent focusing on the development of an innovative WaSH facility. The WPI Cape Town Project Centre has had a consistent focus on water and sanitation projects since 2007, and the WaSH team this year prepared by spending seven weeks researching a sustainable sanitation structure. Providing informal settlements with proper water and sanitation is

an on-going struggle, and the community of Langrug is no exception. Currently, there is approximately one toilet for every fifty people in Langrug, and although the Municipality has been working to improve this ratio, it is still far from South Africa's standard of five families per toilet (CORC 2011). Furthermore, the GE Foundation has provided WPI with a grant to spend on an innovative, community-driven sanitation project. The implementation of a WaSH facility would not only meet the partnership's desire to implement a physical structure, it would also address a critical community need, secure an adjacent plot of land for future MPC construction, and establish Langrug as a site for on-going WaSH innovation.

## Key Elements

The final WaSH design goes beyond the standard in sanitation by incorporating community-driven aspects with innovative sanitation services. Building off of the 2011 WPI WaSH team's project, we worked with CORC representatives and the Working Team members to design a WaSH facility that could be easily incorporated into the MPC in the future. The facility includes five hand-washing sinks, two of which are lowered for children, four laundry basins in a central area so mothers can watch their children while washing laundry, urinals, two showers, and a total of nine toilet stalls – three each for men and women, two for children, and one unisex handicapped stall. During operating hours, the facility will be moni-



Figure 14: WaSH area design



Figure 12: Greywater Health poster created



tored by a caretaker responsible for cleaning, maintaining, and distributing toilet paper and soap. The WaSH facility will be well lit and secured at night with the possibility of a toilet and tap to be accessible after hours. The facility will be multifunctional and include a children's learning area, a hair salon, benches, and gardens. These characteristics will provide a more welcoming and dynamic communal space; an approach that has proven to increase the longevity and sense of community ownership of such facilities (Hobson 2000).



Figure 15: Push-button flush toilet

## Technical Design

The outer structure consists primarily of poles, timber, and zinc sheets; these materials were chosen because they are easy to work with, obtainable at a relatively low cost, and are familiar to the community. The toilets, hand sinks, and laundry basins are made of a composite material that is

both durable and aesthetically pleasing. The toilets use a push button, cistern-less design, as shown in Figure 15, reducing the risk of vandalism by concealing the plumbing behind the walls. The facility has been designed with the intention of introducing sustainable sanitation options in the future such as:

- Rainwater collection for hand washing
- Greywater collection and recycling for toilet flushing
- Urine divergent toilets

## Construction Process

By the completion of our project, we had erected the main structure of the facility which includes the walls, roof, and concrete slab, and base plumbing infrastructure. In addition to the physical building, we developed plans with the Working Team to continue construction after we leave. Though the facility was ready for the installation of toilets, we felt it best to delay installation until caretakers were trained and employed by the Municipality to ensure the long-term sustainability of the new facility.

WPI, the Working Team, CORC, and the Municipality all worked together in a collaborative partnership throughout the entire implementation process and were able to accomplish an impressive structure in an extremely short period of time. The commitment and immense amount of effort put forth by the Working Team truly showed



Figure 16: Working together to implement the WaSH facility

their dedication and perseverance to the upgrading process. Trevor, a Langrug community leader, rose to the occasion and presented himself as a key force throughout construction. His building expertise and drive was inspirational and will be critical for the completion of the facility. Alfred, another community leader, was extremely hard-working and kept morale high with constant jokes, singing, and dancing. Hendri, a municipal field worker, supported us

every step of the way, especially with logistics and design recommendations. Olwethu Jack from CORC was instrumental to the design process and to fostering effective working relationships. The construction of the facility was a true multi-stakeholder process that all agreed had strengthened the Langrug partnership by bringing everyone together to work toward a common goal.



## Implementation Challenges

Throughout the construction process, we faced many challenges. The decision to move forward with the WaSH facility left us with only two short weeks to finalise the design as well as finish critical construction. Although challenging, it was fascinating and useful to learn the working habits and building techniques of the Working Team and collaborate with them so they felt responsible for the structure. Furthermore, materials were difficult to obtain on such short notice, and logistical issues of transportation and partners' availability made the process complicated. During the second week of construction, farm worker riots prevented us from reaching the build site for two full days, and when we returned, we discovered that most of our tools had been stolen. Though these obstacles chal-

lenged our timeframe, everyone showed their resilience and pushed to keep the project moving forward.

## Construction Phases

The WaSH facility will be implemented in three main phases as presented below in Figure 17 and is projected to take an entire year. We completed the first phase, leaving plans for the partnership to continue construction on to Phase II.

## Conclusion

Two months ago, our team arrived in Langrug with the hope of supporting the partnership to develop its many goals and plans. The tensions encountered on our first days exposed the partnership's need to regroup and fortify itself, and after many discussions, physical implementation became the immediate goal of our work. A

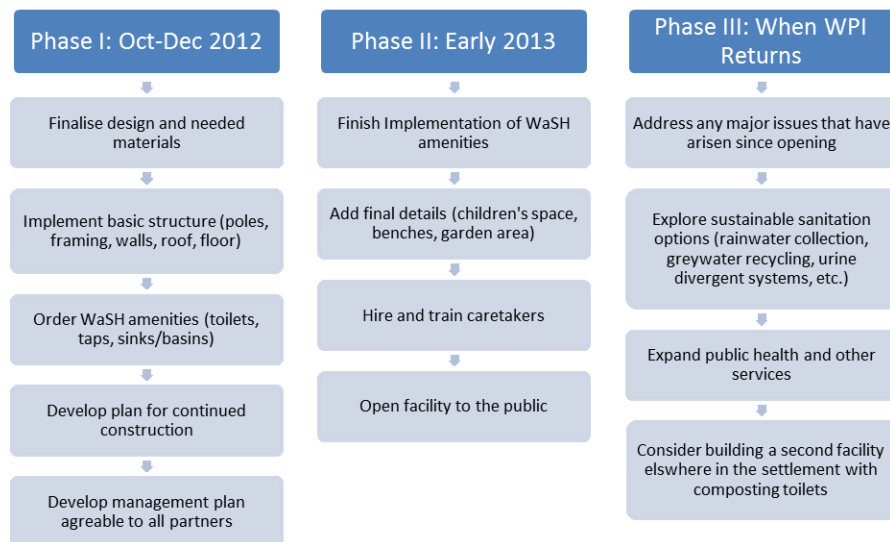


Figure 17: Construction phase diagram



Figure 18: WaSH area before and after

tangible project would focus the partners' efforts toward a common objective: regaining partnership momentum.

Several projects considered for implementation were advanced through preliminary planning stages, but ultimately financial and time constraints encouraged the partnership to focus on a WaSH facility. This was a tremendous opportunity for the partnership to show its commitment to upgrading the settlement and allowed WPI to achieve a new threshold in its long-term programme of sustainable WaSH innovations.

## Reflection

Above all, we had the remarkable opportunity to witness and participate in a dynamic decision-making process. The collaboration among the partners was never just a simple discussion but an intricate dialogue requiring constant adaptation and cooperation. We all worked as equals; each partner was acknowledged with the same

respect regardless of others' viewpoints. Even as students, we were treated as equal participants in this partnership; we not only had the opportunity to share our experience and skills but were able to adapt and learn from everyone involved.

Our project outcomes were the culmination of every stakeholder's input resulting in a unique final product. While WPI will not be on site when the WaSH facility is completed, the completion process will allow our Langrug community partners to continue improving their internal dynamics and capacity to undertake ambitious projects. External technical, financial, and organisational support, together with the community's cultural and logistical knowledge, set the framework for powerful collaboration. It was fascinating to witness the idea-sharing and working habits of each partner as we pushed forward our many projects. Our cross-cultural learning experience was significantly enhanced by this dramatic and persevering partnership.

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