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# TWO NEW SCHOOLS

## for the KwaZulu-Natal Department of Education

East Coast Architects is a KwaZulu-Natal based practice that works on socially, environmentally and economically sustainable projects.

**W**e believe that while sustainable building has broader, long-term advantages for national & global issues such as climate change and resource depletion, it's more immediate and direct benefits are experienced by poor and under-resourced communities. For example, in a school environment the reduction of energy and water

consumption also reduces operational costs thereby freeing up scarce funds for educational activities. One of the important challenges as designers and facilitators of these projects is to reduce the consumption of resources without compromising comfort and quality of environment.

Schools play a critical role in the life of communities, especially those situated in remote and impoverished areas. These areas are typically under-served by other public or private institutions and, consequently, offer few opportunities for social, cultural, or economic growth.

We have recently designed two schools in the small KwaZulu-Natal towns of

Kokstad and Vryheid. Both schools are located in urban environments that are deficient in social infrastructure. Mindful of these contexts the schools are designed as 'community hubs' and the layouts allow easy access to community / school shared facilities such as sportsfields, libraries, computer labs and classrooms.

**SEVEN FOUNTAINS PRIMARY SCHOOL**  
 Seven Fountains Primary School is located in the Shayamoya Township of Kokstad. The school, which has a learner population of 1000, was opened in 2007.

Our interest in the process of designing and building schools meant that we

invited our client – the school community – to participate in every stage of the project. In doing so, the school as an institution has strengthened its ties with the residents of Shayamoya and the facility itself is used and cared for by this under-resourced community.

In the process of creating a sustainable school we identified a number of key design interventions that, through little or no extra cost, could improve the quality of the teaching and learning spaces whilst at the same time reducing the environmental impact of the building. These strategies included:

### Passive Solar Design

- Carefully considered solar orientation of the main learning areas means that they take full advantage of the seasonal & daily solar cycles to ensure that classrooms are cool in summer and warm throughout the icy Kokstad winter.
- All of the learning and administrative areas are well insulated to improve the thermal comfort levels.
- Good natural light improves the quality of the visual environment. Glare and heat gain are reduced through appropriately positioned solar shading and light shelves.

Round adobe multi-purpose classroom & solar shading on west facing windows

### Water Strategies

- Rainwater is collected from all impermeable surfaces throughout the school and stored in an underground reservoir. A windmill pumps this grey water to header tanks from where it is gravity-fed to flush toilets.
- Low consumption fittings and appliances reduce the volume of water used.

### Variety of teaching spaces

- Mezzanine or loft areas in the classrooms provide breakaway spaces for creative teaching and for project work.
- Outdoor teaching spaces provide alternative learning environments when the weather is good.
- Round multi-purpose classrooms for creative and cultural activities have been built using traditional methods.
- Specialized rooms for library and computers create an information hub that is located centrally and is easily accessed by the school and surrounding community.

### Post-occupancy Monitoring & Evaluation

- The effectiveness of passive solar design strategies is monitored

Header tanks collect & distribute both potable water & grey water throughout the school

- by sensors which measure room temperatures, light levels and energy consumption.
- Water consumption patterns are monitored.
- A digital weather station provides live weather data to enable us to monitor thermal performance of the buildings as conditions change.

The post-occupancy feedback from the school has enabled us to fine tune the performance of the Seven Fountains Primary School infrastructure. In addition, lessons learnt from the entire process have informed the design of a new school in Vryheid. Lakeside Park Extension Primary School will also be KwaZulu-Natal's first new 'full-service' school meaning that it in addition to mainstream learning it will provide support to learners who experience barriers to learning.

Construction commences on this new school later this year.

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Interior view of the multi-purpose classroom built using sun dried adobe bricks

