

# LITERARY GREEN

The new National English Literary Museum will be South Africa's first green museum when it moves to bigger premises that can accommodate its exhibition needs. This new building by the Department of Arts and Culture aims to achieve a 5 Star Green Star SA rating using the new Public and Education Building tool.

WORDS BRENDON BOSWORTH RENDERINGS INTSIKA ARCHITECTS

For over 30 years the National English Literary Museum (NELM) has been housed in rented accommodation - once home to priests from St. Patrick's Cathedral - but things are about to change. The current premises can't accommodate the museum's trove of literary manuscripts and books, including the work of celebrated authors like women's rights campaigner Olive Schreiner. The museum's staff has long been hankering for more exhibition space to flaunt the museum's impressive collection, and soon they will have room to do so.

The museum will move into a new building to be constructed on a vacant greenfield site on the cusp of a residential area in Grahamstown. The new building, commissioned and funded by the

Department of Arts and Culture, will boast exhibition spaces, a reading room, a classroom and a 144-seat theatre, among other amenities.

It will offer "state-of-the-art storage facilities for our collections", says museum director Beverley Thomas.

"The NELM is one of the 28 Public Entities of the DAC. The DAC has plans to assist the NELM to expand its scope not only focus on the English language but also incorporate other South African languages especially the indigenous languages that are currently not catered for in terms of preservation and protection. The space for the expansion to accommodate other languages has already been created in the design of the new NELM," says Pam Ben-Mazwi of the DAC.





**OPENER.**  
Aerial view of  
the new building.

The roof garden  
will host endemic  
and indigenous  
vegetation. It will  
add to thermal  
mass and increase  
the biodiversity of  
the area.

#### AESTHETIC APPEAL

The new NELM building has been designed to marry functional elements, like robust waterproofing to ensure that the collections are not damaged, with an aesthetic that does its national importance justice and blends in with the suburban surrounds.

“The building form will be a balance between curves and linear lines,” says architect Cobus Gouws of Intsika Architects, the consulting firm on the project. “This carries through to the landscape design and even towards the door handles - a curved, organic type of form which creates a park-like effect.”

Inside, the walls will be mostly white and natural colours. Guests arriving at reception will be greeted by a feature wall covered with Cocomosaic, a type of tile made from coconut shell. Gabion walls on the exterior north and west facades will be stacked with stones sourced from a local quarry. Besides producing a natural look, the stones will add thermal mass to the building; during the day they will absorb and retain heat, while slowly releasing it at night.

Repurposed materials will also feature prominently: the steel used will have 90% recycled content while 95% of the timber will be either Forest Stewardship Council (FSC) certified or wood that has been reused or recycled. Carpets containing recycled plastics will line the floors of the museum’s theatre and administration areas, while recycled rubber from car tyres will be used in flooring in the exhibition spaces. Bamboo flooring will complement the boardroom area, enhancing the natural aesthetic.

#### LIGHTING CONSIDERATIONS

The building will be oriented north-south, with the entrance on the south side. Glass will be used extensively on the south facade, lending the building a civic appearance and allowing natural light to enter. For the south facade, immediately adjacent to display halls where sensitive material will be displayed, laminated solar control glass will be used to reduce heat and prevent UV light from entering. The glazing on the north and west facades, will be low emissivity glass to help control radiant heat gains and allow natural light in without compromising energy consumption due to high heat gains.

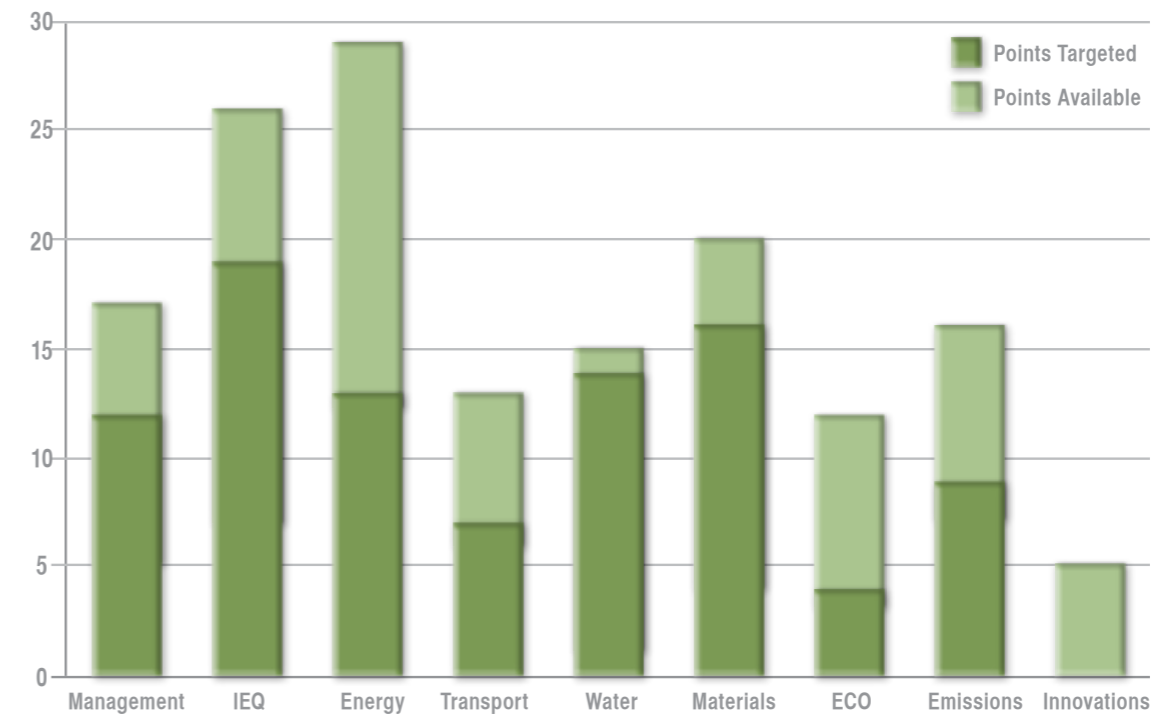
When considering the electric lighting system, the design team focused on two things: reducing the total lighting energy demand of the installed fittings and adding controls to ensure the lights were only on when required, says Chilufya Lombe, mechanical engineer with Solid Green Consulting, the firm responsible for managing the building’s Green Star SA certification. The control included occupancy sensors that turn the lights off when there is no one in the room and daylight sensors that dim the lights depending on ambient natural light conditions in the space. The occupancy sensing was also extended to the air conditioning system.

The building will be sub-metered, and museum staff will be able to monitor energy consumption with a building management system (BMS). This

#### NUTSHELL

**Location** Grahamstown  
**Gross floor size** 6 000 m<sup>2</sup>  
**Anticipated construction start date** October 2013  
**Anticipated construction end date** October 2015

### 64 POINTS TARGETED 5 STAR (PEB) DESIGN RATING



is an important feature for ensuring the building is operating as predicted in the design.

#### WATERPROOFING

The design team had to pay close attention to waterproofing the building. The north side of the museum will house the establishment's precious collections in an underground bunker, which will be situated directly below the green roof, and this section will be heavily waterproofed.

The high-stress concrete on the roof, which will be sloped slightly to promote run-off, will have Penetron, a waterproofing agent, mixed into it. It will be overlaid with Derbigum, a waterproofing membrane, explains Werner de Lange, civil engineer with Camdekon Engineers. Placed on top of that will be a high-density polyethylene (HDPE) product, Zipcore, a cusped sheet that creates spaces for water to drain out. This layer will sit beneath Geomesh and be sealed with Bidim, a geotextile.

The building's walls will be protected in a similar way, and buffered with a 300 mm layer of washed sand for drainage, while a drainage system beneath the museum will ferry water into the stormwater system.

#### WATER CONSERVATION

Inside the museum, water meters connected to a BMS will allow the facilities manager to monitor water use and detect leaks. Drinking water will be provided from

the municipal supply. Stormwater, stored in a holding tank below ground and pumped up to a reservoir on the roof, will be used to flush the toilets and urinals.

The site will also house a stormwater management system consisting of two interlinked ponds. The larger of these could hold up to 243 000 litres of water, while the smaller one will have capacity for 60 000 litres.

#### XERISCAPING THE GARDEN

NELM will rely on endemic and indigenous vegetation for its greenery. A mix of grasses, trees, shrubs, bulbs and succulents sourced from various biomes will inhabit the plot.

This vegetation will require no irrigation, resulting in a substantial water saving.

With the help of a plant scientist, landscape architect Francois van Rooyen the director of Red Landscape Architects in Pretoria, vegetation was selected to best suit the variable local climate and soil conditions.

Even though the garden will require no irrigation, except during the early stages when the plants will be establishing themselves, this doesn't mean

#### SUSTAINABILITY FEATURES

- Xeriscaped garden
- Storm water used for toilets
- Green roof
- Building management system
- Occupancy sensors
- Recycling facilities
- 90% recycled content in steel
- 95% of timber is FSC certified or reused/recycled
- TV screen displays efficiency information
- 20% of the project's contract value represented by materials or products sourced from within 400 km of the site

it will require no maintenance. “When a plant dies, it will have to be replaced,” says van Rooyen. “Especially for the first two years, it takes a lot more care than a normal garden with irrigation.”

#### GREENING THE ROOF

Low-growing vegetation will be planted on the “green roof”, which will sit above the museum’s collections bunker, and will be visible from the road behind the museum. Here, plants will grow in 600 mm of soil, which will be stratified to facilitate correct drainage.

Having plants growing on the roof helps reduce the “urban heat island” effect. This occurs when the sun warms city surfaces like roofs and roads to temperatures exceeding air temperatures. In large cities, air temperatures might be 1-3 °C warmer than in rural surroundings, according to the U.S. Environmental Protection Agency.

The vegetated roof also acts as an insulator and will reduce the amount of energy need to cool the archive areas mechanically. The remaining parts of the roof, which will not feature plants, will be light in colour and have a high solar reflectance index, to reflect sunlight.

“The less heat the building absorbs, the less insulation is required,” says Marloes Reinink of Solid Green Consulting. The combination of the green roof and partly storing the collections underground assists the climate control of these spaces, that require a constant relatively low temperature, adding to the building’s energy efficiency, she adds.

#### A GREEN PILOT

Along with being the country’s first green museum, NELM was also a pilot project for the Green Building Council of South Africa’s (GBCSA) recently launched Public and Education Building tool, which offers Green Star SA accreditation for public sites such as libraries, galleries, schools, universities, convention centres and places of worship.

NELM has been registered with the GBCSA with the aim of securing a 5 Star Green Star SA rating for its design. Initially, the goal was to achieve a 4 Star rating, but after workshoping with Solid Green, it became evident that a higher ranking could be achieved.

“The original brief required a minimum 4 Star rating that was achieved relatively easily as the design team was green-conscious from day one,” says Een Greyling, project manager at the Department of Public Works. “Scrutinising the design upon

completion elevated the fact that only a few extra points were required to achieve a possible 5 Star rating without incurring major costs.”

#### PROJECT CHALLENGES

Since the building will be the first of its kind, and the design serves as a pilot for the GBCSA’s new rating tool, the architects and engineers were exploring new territory and had to research across disciplines to inform their design choices.

“The whole green concept is new to us,” says De Lange. “It’s really challenging; it’s a different way of thinking about your design approach.”

Working on a Green Star SA pilot project also resulted in a lot of back and forth with the GBCSA as the sustainability consultants had to query certain requirements, says Reinink.

Having a large team dotted around the country brought further challenges. A mix of face-to-face meetings, Skype calls and emails helped keep the collaboration running smoothly. “It’s a different intensity than what you normally have with a project team,” says Reinink.

Chiefly, though, as with many projects, the core challenge was to derive the most economical and feasible solutions for the client’s needs and the green recommendations while considering construction costs and the building’s future maintainability, says Greyling. “The end result is that the building has been designed in accordance with international standards.”

#### SOURCEBOOK

**Client** Department of Arts and Culture Pam Ben-Mazwi 012 441 3051 [www.dac.gov.za](http://www.dac.gov.za)

**Implementing agent** Department of Public Works Een Greyling 041 408 2000 [www.publicworks.gov.za](http://www.publicworks.gov.za)

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