



## **MEDIA RELEASE**

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### **Integration of sound engineering and ESD principles produces another first for Tshwane**

Engineering, management and specialist technical services company Aurecon achieved a first in Tshwane in 2011 when its [Lynnwood Bridge Office Park building](#), situated just off of the N1 highway, achieved a 4 star GreenStar SA – [Office Design v1, Office Design v1] rating from the Green Building Council of Southern Africa.

The company recently undertook work on another ‘green’ office building in the same precinct, with this building achieving yet another first in Tshwane when it received a 5 star GreenStar SA – [Office Design v1, Office Design v1] rating. “Aurecon’s experience in delivering integrated sustainable design projects contributed significantly to achieving this result,” says Marni Punt, environmentally sustainable design (ESD) consultant at Aurecon.

The project, developed by Atterbury, with Studio 3 Architects International (Pty) Ltd as architects, comprises five basement levels, as well as ground plus five floors. Aurecon was responsible for the majority of engineering design disciplines on the project, including mechanical, structural, civil, wet services, fire, traffic, as well as ESD consulting.

### **Integration of engineering with sound knowledge of ESD principles**

“Critically, Aurecon was able to drive an energy efficient agenda throughout every phase of the project lifecycle, due to the integration of conventional engineering disciplines with sound knowledge of ESD principles,” comments Ashley Underwood, Aurecon Engineer. “This integration was key in terms of making design decisions that positively impacted on the building’s performance at the very outset of the project, as opposed to simply designing the building and then awaiting feedback on how to optimise its performance at a later stage.”

The optimisation of the performance of the building during design phase included detailed modelling of all building services using complex modelling software which helped the team understand the building’s use of energy and enabled them to check the sustainability of each decision and then tweak the design to ensure enhanced performance. “Each and every design decision was made with energy in mind, and we were able to direct investment to the areas which offer the best payback,” adds Underwood.

Just some of the key optimisations that resulted from this modelling included:

- A basement monitoring system that controls ventilation to the various basement zones based on the carbon monoxide concentration, only providing ventilation when and where it is necessary. The design of this system required strong collaboration between the traffic engineer, the mechanical engineer and the energy modelling team.
- Air side economy cycle on the fresh air system, allowing the air-conditioning system to take advantage of free cooling when outdoor conditions are conducive.
- CO<sub>2</sub> demand control of fresh air, allowing only the necessary amount of free air to be supply during operation.

- Optimising the mix of glazing properties, external shading and building insulation.

Underwood stresses that it was this knowledge of the impact of design decisions on performance that enabled the team to achieve 12 points for the 'energy' category during round one of the team's submission to the GBCSA. "Because of Aurecon's integrated design approach, the project achieved higher points for energy than initially expected. This enabled the project to target a 5 star rating with minimal additional investment," says Marni.

### **Multiple project challenges**

The entire project team has tackled multiple challenges, including an adjacent wetland and the two podiums being rated as a single development.

"A wetland in close proximity to the building threatened registration with GreenStar SA, unless a viable solution to mitigating potentially harmful water run-off, which could negatively affect the surrounding flora and fauna, was found," explains Punt. Aurecon's building makes use of various species of plants affixed to the building's northern car park façade to act as a natural filtration system. "This system, although effective, was a costly solution for these offices," explains Punt. "This building makes use of a mechanical water filtration system which is more cost-effective and integrated with the building's other water systems."

Punt adds that because the building consists of two towers, many of the tower's systems could not be fully integrated. "The two towers were submitted as one development with a single rating, which means both towers were jointly required to achieve a high level of performance." She explains that this was achieved through careful modelling of the towers' performance and constant tweaking of the building systems to achieve desirable performance levels.

### **A worthwhile investment**

"The energy saving alone would make the investment in the five star building feasible", says Underwood.

Punt believes: "It's critical to realise that a green building is a long-term investment. Paybacks such as increased productivity and decreased sick rates, although difficult to quantify, represent significant, ongoing future gains. Both Aurecon's current offices and this 'green' office building in the same precinct demonstrate that it's possible to deliver a superior, integrated end product that is an asset to the people who use it and the natural landscape which surrounds it, for a similar cost to that of a conventional building."

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With an office network extending across 26 countries, Aurecon has been involved in projects in over 80 countries across Africa, Asia Pacific, the Middle East and the Americas and employs around 7 500 people throughout 12 industry groups.

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