



IN A LEAGUE OF ITS OWN: GIBELA'S SOUTH AFRICAN TRAIN-MANUFACTURING FACILITY

“Natural ventilation – good, fresh air – will be the order of the day in all working places”

With the ink barely dry on the contract between Gibela Rail Transport Consortium RF (Pty) Ltd (Gibela) and the Passenger Rail Agency of South Africa (PRASA) for the manufacture of 600 cutting-edge Xtrapolis MEGA commuter trains for Metrorail, Gibela's R1 billion, trend-setting, South African train-manufacturing facility is set to leap from architects' drawing boards into reality.

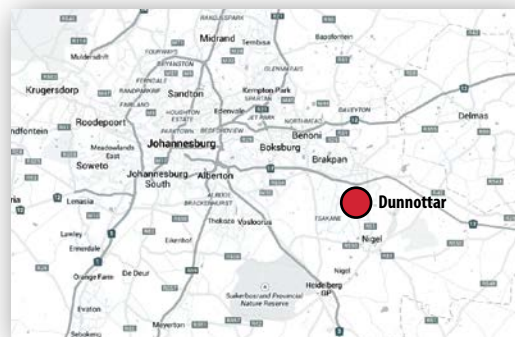
The new facility will be an eye-catching addition to the emerging, 21st century industrial landscape of Ekurhuleni in South Africa's Gauteng province, covering a 70-hectare site near the small settlement of Dunnottar.

Co-incidentally, this is just a hop and a skip away from the town of Nigel, the heartbeat of the country's first train-building hey-day that started more than a century ago before faltering several decades on.

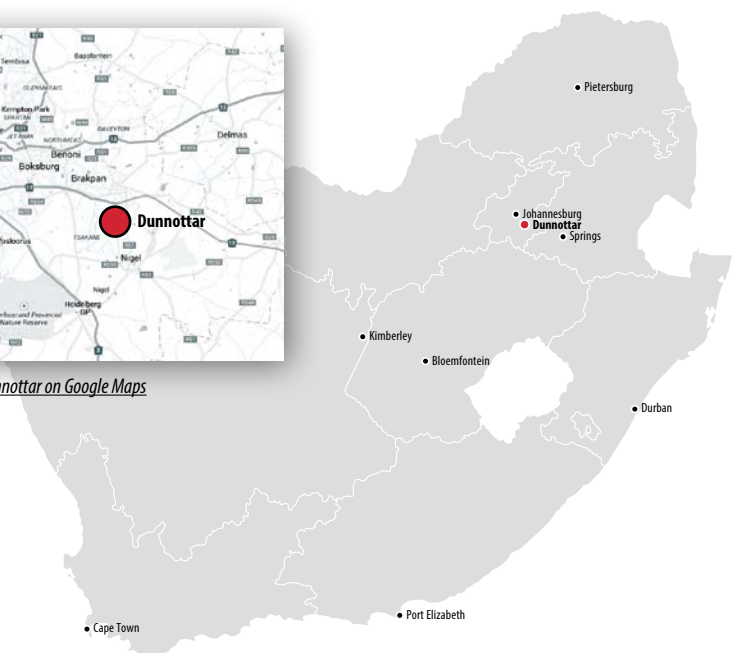
Gibela's new facility will comprise five key components:

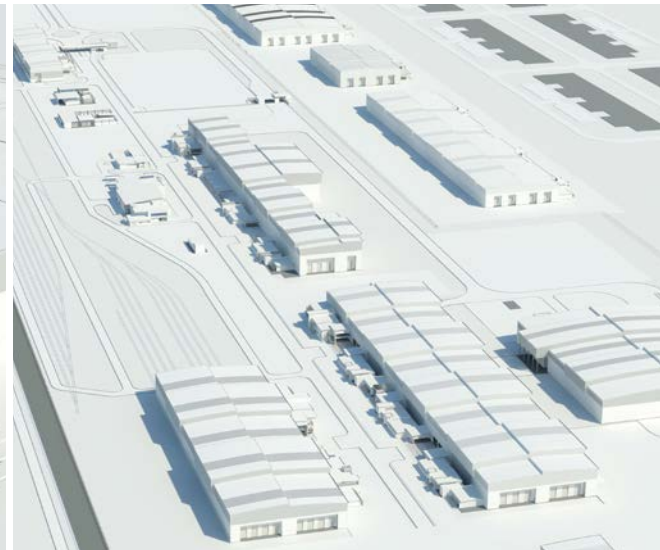
- > a 36-hectare 'integration' or train assembly site;
- > a 10-hectare site for the manufacture of bogies, motors and traction components;
- > a 25-hectare 'supplier park';
- > premises for engineering and maintenance services; and
- > a purpose-built training facility.

LOCATION OF THE NEW FACILITY



[Click here to view the location of Dunnottar on Google Maps](#)





Bicycles?

To minimise greenhouse emissions from the facility, there will be no petrol- or diesel-powered utility vehicles in use. Instead, electrical vehicles and bicycles – yes, bicycles – will be *de rigueur*.

For more information

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The tender to design the new Gibela facility was won by AECOM South Africa (Pty) Limited, subsidiary of global architecture and engineering design firm AECOM.

Key to its success was its interpretation of Gibela’s exacting brief – in particular, how the proposed design would deliver to Gibela its requirement for so-called “LEED platinum certification”.

LEED stands for Leadership in Energy and Environmental Design. In essence, this is a set of rating systems, developed by the US Green Building Council and adopted worldwide, for the design, construction, maintenance and operation of “green” buildings.

Interestingly, LEED’s tools are premised largely on the needs of residential and commercial buildings, not industrial complexes. So, in addition to making its mark with the Xtrapolis MEGA in terms of cutting-edge commuter train manufacture, Gibela is pushing design and construction environmental boundaries – not just in South Africa but globally – with its Dunnottar facility.

More basic perhaps than environmental considerations in the design – but no less important – was ensuring a linear layout for the whole facility to ensure optimal process flow. Some basic considerations – shape, height, width, length and depth – were critical, as was positioning of the key constituent buildings. This flowed largely from the need to incorporate a 1.3-kilometre rail track for testing completed trains before their delivery to PRASA.

Getting back to important environmental requirements, maximising the use of natural light to reduce electricity consumption has required a level of lateral thinking that extends beyond glass roofs and large, plate-glass windows. These could lead to a greenhouse-like working environment, unbearable certainly in the summer months and necessitating power-hungry air-conditioning. Natural ventilation – good, fresh air – will be the order of the day in all working places, but that means more than just the provision of windows that open.

Familiar with the concept of “heat islands”? These include the likes of paved or tarred parking bays, loading zones etc, heat “traps” that are so much a part of conventional industrial environments. At the Gibela facility the negative impacts of these will be offset by the extensive use of one of the oldest, replaceable forms of shelter – trees. Use of conventional covered parking will be leveraged through the incorporation of photovoltaic panels to provide “free”, clean energy to the facility.