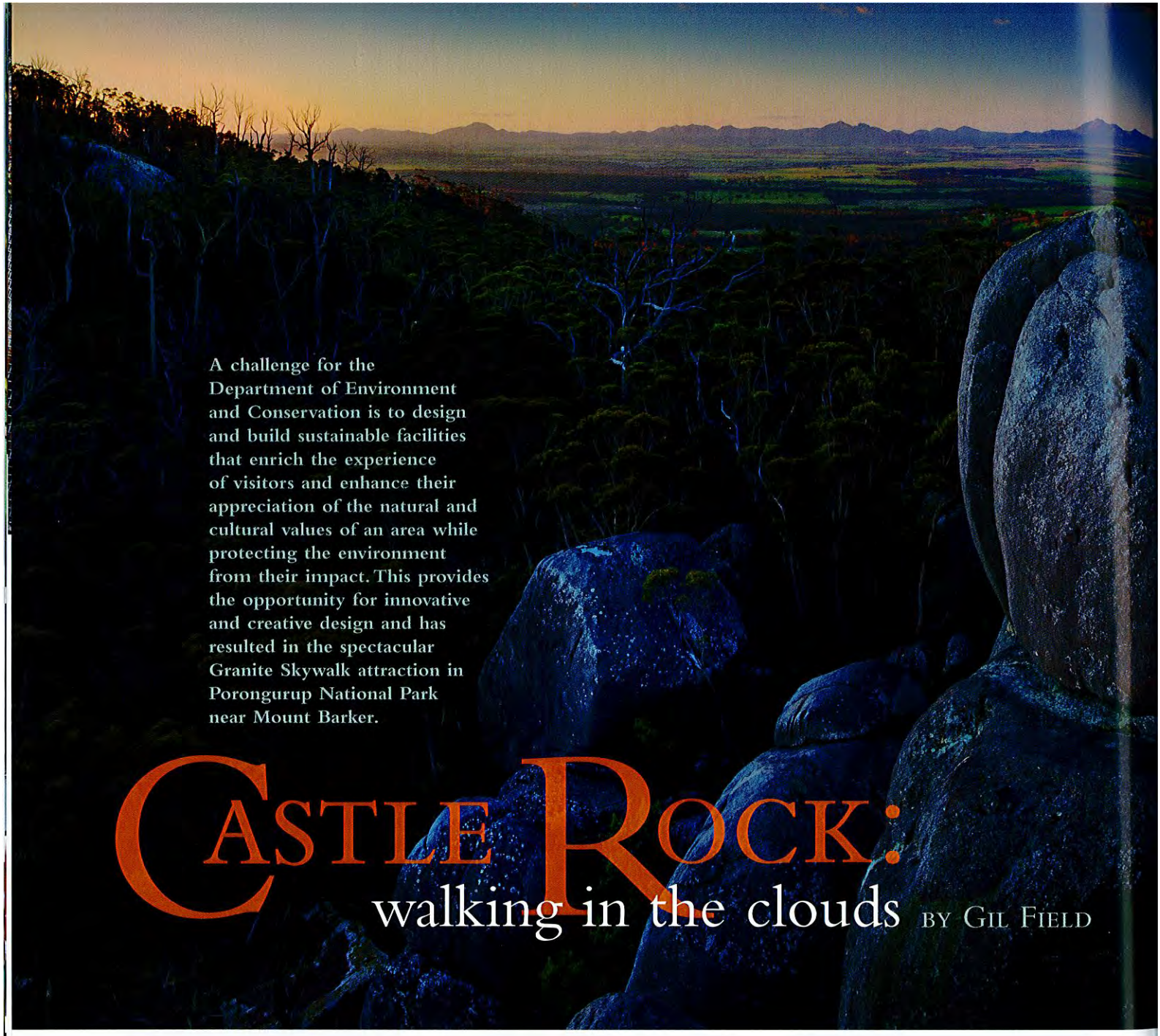


A challenge for the Department of Environment and Conservation is to design and build sustainable facilities that enrich the experience of visitors and enhance their appreciation of the natural and cultural values of an area while protecting the environment from their impact. This provides the opportunity for innovative and creative design and has resulted in the spectacular Granite Skywalk attraction in Porongurup National Park near Mount Barker.

Castle Rock: walking in the clouds

BY GIL FIELD

Porongurup National Park, located about 40-minutes from Albany on Western Australia's south coast, houses the spectacular Porongurup Range. The range winds for 12 kilometres, reaches up to 670 metres high and provides views of the Stirling Range and, on a clear day, the Southern Ocean. At the eastern end of the range is Castle Rock which, thanks to an innovative and ambitious development, visitors can now experience from a new perspective.

The experience

Known as the Granite Skywalk, the attraction, opened in April 2011, is not a repeat of the famous and extremely popular Tree Top Walk in the Valley of the Giants. Although there are some similarities—you are on a suspended walkway looking over a rail to the horizon and through a grid to the forest floor below—there are many differences. While the Tree Top Walk is an easy 400-metre walk mostly along decking, the Granite Skywalk is reached by a tough two-kilometre uphill walk. Even fit walkers need to stop and pant at least a few times to catch their breath and the trail is rough and uneven. It can also be slippery after the rain, mist and low cloud for which the Porongurups are renowned. But the slog is definitely worth it.

After reaching an opening next to a steep granite rock face and bulging boulders near the summit, walkers need to drag themselves up through the gap between the boulders using steel handholds fixed into the rock. Then there is a scramble over sizeable rocks to a vertical six-metre ladder that leads onto a walkway near the top of Castle Rock. And that's the easy bit. The stainless steel walkway wraps around the side of the rock and is see-through to the forest floor way below. There are no pylons, just stainless steel anchor points with struts coming out of the side of the rock. The walker stands seemingly suspended in thin air. One can't help wondering how this architectural and engineering marvel was constructed. It doesn't wobble like the Tree Top Walk but it does confront one's fear of heights and test one's faith in the construction.

Getting there

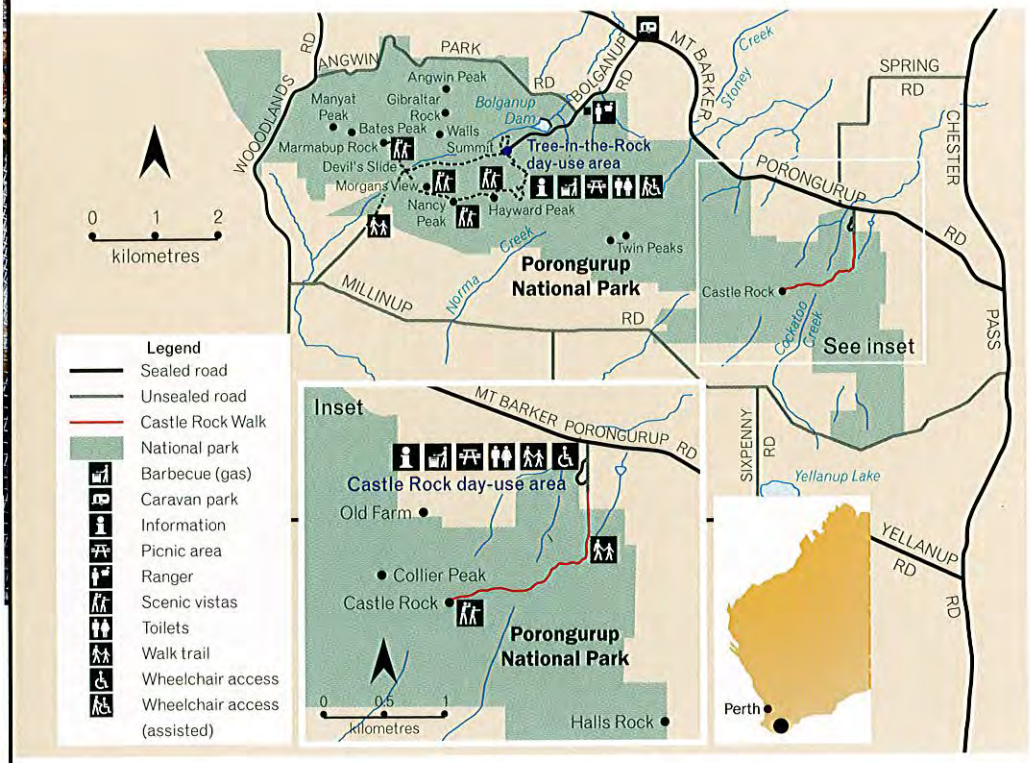
The concept to replace an old and rusting ladder and walkway on top

Above The stunning vistas across Porongurup National Park to the Stirling Range.
Photo – Andrew Halsall

Right Climbing the ladder to the Granite Skywalk.
Photo – Doug Simpson/DEC

of Castle Rock came from members of the local community. They were inspired by the Tree Top Walk and wanted a similar tourist attraction. An engineer's report said the old structure's time had passed, so the then Department of Conservation and Land Management's Recreation and Landscape Unit developed the initial concept for a suspended 'skywalk'. The concept was developed in late 2004 but it was not until 2008 that the project could be developed and 2011 before it was opened.

The unit designed the walk to hang off the side of Castle Rock, rather than sit on its top, skirting the summit to enhance the vertical experience. It uses the flat vertical edge of the rock at the endpoint as a kind of elevated backdrop to the structure, while also giving visitors framed views back toward the Stirling Range. The structure enables users to follow the changing views as they skirt the rock and the long curve, and the hidden endpoint enhances the sense of anticipation. The effect is a gradual unfolding of the landscape as one follows the curvilinear line of the deck around the side of the sheer face of Castle Rock. The walkway



culminates with an abrupt end like a springboard into space.

Materials

The unit chose stainless steel for the building material as it would not corrode and therefore rust and stain the granite like the previous walkway on top of the rock. The design aimed to accentuate the experience of being on an apparently unsupported platform at a significant height. While the valley is about 230 metres below, the structure is only about 15 metres above the nearest ground; a lightweight fibreglass reinforced plastic grate was used as decking so the height aspect would be more pronounced. In addition, a transparent polycarbonate balustrade was chosen to enhance the feeling of height. These materials were considered to be more inert and the least harmful to the rock flora.

Building—a high-tech approach

A three-dimensional survey of the rock was carried out at the beginning of the project and was critical to the success of the skywalk's design and construction. After the survey the alignment and final design was refined to better suit the modular structure.

DEC worked with GHD Engineering, which refined the design and managed the project. Robinson Buildtech was the head contractor with sub-contracts for riggers, drillers and helicopters. Living Iron manufactured the steel and contributed to the design of the anchor points. These anchor points penetrate 30 to 40 centimetres into the granite and hold a six-centimetre solid bar. The angle of the drill hole into the rock means the deck virtually holds itself up.

Every anchor point is a different length and different off-set from the rock. The structure depended on numerous core-drilled holes for the anchors and each one had to be accurate within millimetres. Each hole had to be pinpointed by an onsite surveyor.

The building materials were trucked to Castle Rock from Perth. A work site camp was established on an adjoining farm and the materials, equipment including rock drills and generator-welder, food and water for each day were transported by helicopter and lowered by cable onto the summit

Below Enjoying the Granite Skywalk.
Photo – Jiri Lochman

Below right Construction of the walkway was a logistical challenge.
Photo – Bruce Carson/Living Iron

Above left Helicopters were used to deliver materials to the construction site.

Above A bird's-eye view of the structure.
Photos – Bruce Carson/Living Iron

Below The Karri Lookout.
Photo – Gil Field/DEC

of Castle Rock, which is about the size of an average lounge room.

The riggers abseiled to the demarcated drill holes identified in the survey, drilled a hole for half a day into very hard granite and installed each anchor point. The anchor points support the deck, cantilevered stays and balustrade. Once the anchors were located and glued into place they were then stress tested to ensure they met the engineered requirements.

Dean Robinson from Robinson Buildtech described the process of constructing the skywalk as his company's biggest-ever engineering and logistical challenge. He credited the intensive collaboration, particularly between Robinson Buildtech and Living Iron for the success of the project. Many hours were spent together on concepts, followed by design and redesign of the couplings which all had to be constructed off site, then fitted together with only allowance for millimetre tolerances. "The stainless steel finish is an imposing and beautiful structure that is a credit to all involved and we are all proud of the result," he said.

Craig Parton from Living Iron agreed that good communication was essential in a multi-disciplined team, and said it was imperative they worked together cooperatively and trusted others to do their bit. "This was a challenging project regarding access and design," he said. "It is perhaps the most challenging piece of engineering in Australia today because of the location, logistics and technicality. But it created opportunities to find solutions."

Now the Granite Skywalk is complete it poses a challenge for visitors. Unlike the Tree Top Walk, it is not for the mass tourism market; it meets a 'soft adventure' tourism niche. Those who can make the effort to do the walk, climb over rocks and up the ladder, and confront their fear of heights, are justly rewarded with having met the challenge, experienced the adrenalin rush and enjoyed views. However, for the less robust visitor, there is always the Karri Lookout, a ground-level deck with a good view at the end of the strenuous walk. Here one can sit, relax and contemplate the role of creative design in enriching experiences in parks in Western Australia.

Gil Field is the Department of Environment and Conservation (DEC) Interpretation Unit strategic planner. He can be contacted on (08) 9334 0580 or by email (gil.field@dec.wa.gov.au).

The author would like to acknowledge DEC's Doug Simpson, Steve Csaba, Luke Coney and Tracy Churchill; Robinson Buildtech (www.robinsonbuildtech.com.au); and Living Iron (www.livingiron.com.au) for their contributions to this article and the project.

An EveryTrail guide for Porongurup National Park can be downloaded at www.everytrail.com/guide/porongurup-national-park.

Volume 27 Number 4 WINTER 2012

contents

Regulars

Publishing credits
Executive editor Madeleine Clews.
Editors Rhianna King, Joanna Moore.
Scientific/technical advice Lachie McCaw, Keith Morris, Kevin Thiele.
Design and production Natalie Jolakoski, Gooitzen van der Meer, Sonja Schott, Tiffany Taylor, Lynne Whittle.
Illustration Gooitzen van der Meer.
Cartography Promaco Geodraft.
Marketing Cathy Birch.
Phone (08) 9334 0296 or *fax* (08) 9334 0432.
Subscription enquiries *Phone* (08) 9219 8000.
Prepress and printing GEON, Western Australia.

Maps should be used as a guide only and not for navigational purposes.

ISSN 0815-4465

Please do not send unsolicited material, but feel free to contact the editors.

Published by the Department of Environment and Conservation, 17 Dick Perry Avenue, Kensington, Western Australia.

Visit DEC online at www.dec.wa.gov.au to search the *LANDSCOPE* catalogue.

Department of
Environment and Conservation