Michelle Furrer and Skeeter the giraffe at the Como Park Zoo and Conservatory, St. Paul, Minnesota, USA
Creature Comforts

Zoos are putting animal welfare first. But teams also must ensure visitors stay engaged—and safe.

BY SARAH FISTER GALE
PORTRAITS BY ACKERMAN+GRUBER
Zoos want animals to feel right at home.

But developing natural habitats so creatures can roam in wide-open spaces rather than concrete enclosures runs counter to another project goal: providing visitors with the thrilling up-close experience they expect.

“In the past, these projects were all about making it easy for humans to see the animals,” says Kevin Tanner, president of the Zoos and Aquarium Association of Australasia and director of the Melbourne Zoo, Melbourne, Australia. “Now the focus is on providing for the welfare of the animals as well as connecting people with them.”

Yet sponsors know even the most natural animal habitat project won’t deliver ROI unless visitors keep coming back for more. Bears might love to explore a sprawling wooded area, but if visitors never see them, there’s little incentive for people to return. Striking the right balance is mandatory for project teams.

For instance, Australia’s Sydney Zoo has launched an AU$36 million project to build a cage-free zoo on 16.5 hectares (40.8 acres) of grassland—with visitors in the middle of the action, thanks to elevated boardwalks and glassed observation areas. A US$73 million expansion project at the Henry Doorly Zoo and Aquarium in Omaha, Nebraska, USA will immerse visitors in an African safari with camouflaged buildings and barriers between animals and people that minimize obstructed views. And in Tuzla, Turkey, the city completed a project this year that displays life-size holograms of extinct and existing animals.

Today’s zoo projects must be relevant to the animal and appeal to the local community, says Nicolas Leroux, head of zoological operations for ZooParc de Beauval, Saint-Aignan, France.

“We are always trying to find a good balance between animal and zookeeper needs and public satisfaction.”

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Beauval, Saint-Aignan, France. “We are always trying to find a good balance between animal and zookeeper needs and public satisfaction,” he says.

Re-creating a wild yet inviting kingdom isn’t cheap or easy. Budget and schedule constraints are front of mind for project leaders, because government- and donor-funded zoo projects rely on public interest. This funding and stakeholder environment can put the onus on project managers to make tough choices for sponsors and project teams, says Patrick Janikowski, principal of zoo projects at design firm PJA Architects, Seattle, Washington, USA.

“Zoo projects are a constant challenge,” Mr. Janikowski says.

SOMETHING WILD
One common challenge facing teams tasked with developing new zoo spaces is the complexity of re-creating an animal’s natural habitat. Project teams must help designers look for innovative approaches that can meet requirements on both the animal and human sides of the project. For instance, putting shaded areas or heated rocks near viewing windows can keep animals alert and close to visitors, Mr. Janikowski says.

“We always start by designing animal-appropriate spaces,” he says. His project teams make sure that all designs align with standards set by the Association of

“It’s not just about providing food and water; it’s about giving the animals choices that enrich their lives.”
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—Michelle Furrer
Zoos and Aquariums (AZA), a global nonprofit. Regulations set by AZA and other related global organizations provide a requirements baseline at which all zoo project teams must start, Mr. Janikowski says.

But project teams often must go beyond regulations—and to extremes—to manage requirements. For example, the sponsor of an ambitious US$900 million project to build a new government-owned zoo in Doha, Qatar gave Mr. Janikowski a tall order: no desert animals. His team had to think creatively about how to keep animals from other regions of the world cool. He assembled a team of experts in animal care, horticulture, water management, sustainable building specialties and security, along with local project managers and engineers.

The result: The zoo will include a drive-through safari and a boat ride through artificial water caves 17 feet (5 meters) underground where visitors will float past jaguars and other animals in enclosures carved out of limestone. “The heat is why we buried a lot of buildings, and we created a lot of natural shade with trees and angled structures,” he says. The team also implemented gray water systems to meet strict water use requirements and designed the enclosures to be long and narrow, giving animals the freedom to roam while still keeping them visible to visitors.

For Mr. Tanner’s teams, innovative project planning drives solutions needed for creating natural spaces. To fine-tune new habitats to an animal’s liking, he challenges and inspires teams to generate creative, low-cost ideas. For instance, a team came up with the idea of using a zip line to deliver food into an African wild dog enclosure—a system that requires the animals (which hunt in packs in the wild) to work together to bring the hanging meal down.

“It’s more challenging for them and replicates how they would hunt in the wild,” Mr. Tanner says. By taking an animal-first approach to innovation, the team feels empowered to generate small solutions that can have a big impact. “It’s not just about providing food and water; it’s about giving the animals choices that enrich their lives,” he says.

If you’ve got a one in a million chance of something going wrong and 10 million visitors a year, that’s 10 safety issues per year. You can’t have that.”

—Patrick Janikowski, PJA Architects, Seattle, Washington, USA
FUNDING FRENZY

No matter how imaginative, though, all zoo projects face limits—often dictated by space, money and time. For older zoos that have limited or no expansion possibilities, building new exhibits can be more complicated, says Michelle Furrer, director and campus manager, Como Park Zoo and Conservatory, St. Paul, Minnesota, USA. “We are in an urban center with 14 acres [1.6 hectares] and nowhere to expand,” she says. “We can’t get bigger, so we focus on getting better.”

Ms. Furrer is planning a US$15.9 million project to convert the zoo’s existing seasonal seal exhibit from fresh water to saltwater—considered a best practice for seal enclosures. The project also would add connected tanks that can be closed off for mating or animal care and heated pools that will allow the zoo to keep the exhibit open year-round—even during Minnesota’s bitter winters. The upgrades will make it easier to care for the seals as well.

But the project launch is on hold until funding is secured. The zoo has asked the state government for US$14.5 million, while the rest of the money will come from private donations and foundation grants. “Funding is always a big challenge,” Ms. Furrer says.

The zoo doesn’t charge admission, so the project team must show state lawmakers that the new exhibit would be a statewide asset and attract enough visitors from the entire state to provide an ROI, she says. For instance, the team

“
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—Michelle Furrer

Animal Houses

With the twin goals of animal welfare and visitor engagement, zoos are launching new facilities and renovating spaces.

Doha Zoo
Location: Doha, Qatar
Budget: US$900 million
Timeline: Delayed because of funding issues
Main attraction: Determined to beat desert heat, the sponsors of this new zoo required project teams to find cool ways to re-create African safaris, Asian woodlands and South American rain forests, along with themed hotels and animal conservation facilities.

The Henry Doorly Zoo and Aquarium
Location: Omaha, Nebraska, USA
Budget: US$73 million
Timeline: First phase completed in May
Main attraction: A new 10-year grasslands exhibit is part of a project so complex, the zoo hired a director of capital projects to oversee all construction processes. The project includes construction of an African savanna and lodge.

Calgary Zoo
Location: Calgary, Alberta, Canada
Budget: CA$16.3 million
Timeline: Completion scheduled for early 2018
Main attraction: A family of giant pandas on loan from China needed a home—so the project team is converting a space that’s formerly been used for elephants, a rhinoceros and Komodo dragons. The renovation requires installation of a bamboo forest, complete with rocks, water features and panda-friendly terrain.
showed lawmakers how a previous project—a gorilla forest exhibit that required US$11 million in state funding—resulted in US$24 million in economic impact for the region and also created 202 jobs during the 20 months of construction.

“We did a number of strategies to engage with lawmakers, from printed materials and tours to meetings and hearings,” Ms. Furrer says.

Mr. Tanner knows the feeling. His government-funded zoo must present every major project plan to a legislative board. “Before the government will fund any capital project, they want to review the project plan, including the scope, budget, timeline and how it will benefit the community,” he says.

Winning legislative approval takes rigorous planning and an attention to detail beyond ROI. For instance, Ms. Furrer’s project team has worked to show how the project aligns with federal and global standards. The team showed the government how the project will meet Animal Welfare Act standards for transporting and handling, exhibit enclosure sizes and overall treatment of marine mammals in captivity.

Although she is confident funding ultimately will be approved, the waiting game creates challenges for project schedulers. Minnesota has a short construction season because of its long and frigid winters, so the 18-month construction phase will have to be staggered over two years. Plus the team will need an additional four months to let the seals get acclimated before the exhibit can open.

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**Western Sydney Cage-Free Zoo**

**Location:** Blacktown, Australia

**Budget:** AUS$36 million

**Timeline:** Scheduled to open late 2017

**Main attraction:** Although exotic animals will roam seemingly free among 16.5 hectares (40.8 acres) of grassland, visitors still will enjoy a safe, front-row view. The project team will incorporate elevated boardwalks and glassed observation areas that won’t distract from the space’s natural beauty.

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**Zoo Basel Ozeanium**

**Location:** Basel, Switzerland

**Budget:** CHF130 million

**Timeline:** Scheduled to open in 2021

**Main attraction:** Project leaders face a tall task: create a five-story curved concrete building where visitors will walk down a ramp as part of a journey through the oceans of the world. The facility will feature thousands of creatures from all five oceans, including sharks, coral reefs, a giant octopus and penguins.
Regardless of the year, the team would prefer to start construction in March or April to maximize construction efficiency before work must be paused around November because of freezing temperatures.

“Until you can secure funding, everything gets pushed off,” Ms. Furrer says. Her project team minimizes the impact by keeping internal stakeholders and preferred contractors updated on the project status, often communicating with them weekly to ensure they are available and ready to go when the funding comes through.

Such delays also impact how soon the zoo can start promoting the project to the public and donors who will cover the remaining US$1.4 million. “We want to get supporters excited, but we don’t want to ramp up fundraising until we are much closer to opening day,” Ms. Furrer says.

MAKE NO MISTAKE

Once zoo project construction starts, there’s no room for error. Project teams have to anticipate and actively plan for prevention or mitigation of every risk possible to make sure animals and visitors stay safe and healthy, says Walter Kerr, executive project director for Ocean Park, a Hong Kong theme park that specializes in exhibits for marine mammals and other animals. On typical construction projects, contractors are happy with “good enough” because they know they can always go back and tweak any problems, Mr. Kerr says. But that approach simply doesn’t work with zoological...
Once you move animals into an exhibit, you can’t just move them out to fix something,” he says.

Mr. Janikowski agrees. Zoo project work must be perfect. “If you’ve got a one in a million chance of something going wrong and 10 million visitors a year, that’s 10 safety issues per year,” he says. “You can’t have that.”

Every detail matters. For instance, Mr. Janikowski has staggered the height of picket-style fences along animal enclosures, so parents can’t set children on top of the fence. He also has incorporated animal enclosure doors that open inward—so if an animal accidentally enters a space and tries to attack a zookeeper, the animal is more likely to hit the door and close it than to push it open. His teams also bring on zoological experts to review each project plan before construction. “We sit with their team and go through every choice to ensure the public and staff will be protected,” he says.

To execute projects on often short timelines, Mr. Kerr relies on constant training of team members, along with excellent communication and acknowledgments of the many hours teams put in. (See case study, page 36.) “When they work long hours, you run the risk that quality will slip, deliverables will get missed and damage will occur,” Mr. Kerr says. To mitigate this risk, he recognizes the accomplishments of his teams and provides perks, such as arranging for the park’s food and beverage outlets to feed the contractor’s team members during daily lunchtime stand-up meetings at critical points on larger projects. “It’s a small thing, but it shows them we care, and it keeps them energized,” he says.

Before exhibits open to the public, Mr. Kerr’s teams call on the park’s zoological experts to conduct all final inspections and approve any work involving animals. “The zoological people have the right to veto anything that impacts animal health,” he says. He seeks to build extra time into the project plan for these site reviews, which can reveal mistakes that contractors might overlook. For example, during the final commissioning tests of the US$89 million Ocean Park’s Polar Adventure attraction, contractors failed to thoroughly flush the water filtration system pipework prior to finishing the project, which meant that, if not detected, scraps of metal and other debris eventually could have washed into the pools. Swallowing such debris would be extremely dangerous for the animals. “This happens in all kinds of construction projects, but in these situations it is vital to aim for the equivalent of essentially hospital construction standards in terms of overall system integrity, cleanliness and reliability,” Mr. Kerr says.

Focusing on animal welfare first and committing to good stakeholder management is the key to designing world-class exhibits that adhere to today’s culture of conservation while still creating exciting experiences for zoo visitors, Mr. Janikowski says. “You can make a lot of choices to save money or make the exhibit more exciting. But animal welfare must always come first.”
The 100th anniversary of Taronga Zoo in Sydney, Australia called for a project that would shine a light on the zoo’s history of conservation. So the project team devised a bright plan: a glowing parade of massive animal-shaped lanterns staged each night during Vivid Sydney’s annual 23-day festival stretching from May into June. Each of the 10 lanterns represented an endangered species from Australia and the Indonesian island of Sumatra that the zoo has committed to protecting, including an Asian elephant that’s blue, a brightly colored corroboree frog and a green marine turtle with moving fins.

But even though planning began a year in advance for the Vivid Sydney Taronga Zoo project, a funding delay forced the team to compress the schedule—leaving contractors only weeks to build and install the lanterns, other lighted displays and related infrastructure, says Natalie Scobie, head project manager, Taronga Zoo, Sydney, Australia.

“That put everyone under intense pressure to get the job done. But they rallied,” she says. “Good planning was critical to our success.”

Working with Ample Projects, an Australian design team that specializes in unique artistic installations, Ms. Scobie’s team in May 2015 developed the concept and began putting together a project budget and schedule and defining roles and deliverables to meet the requirements of the zoo staff and the New South Wales State Tourism Board. But the board didn’t approve the budget until March 2016.

That’s when the controlled scramble to execute the project in two months began—and Ms. Scobie’s team was more than ready, thanks to thorough planning. For instance, the project team had conducted weekly meetings with key stakeholders from across the zoo to keep everyone abreast of planning and funding progress.

Once construction and installation began, project planners met biweekly with internal stakeholders, including contractors, zoological experts, zoo vendors and leadership. Those stakeholders gave feedback to help build knowledge for project decision-making and to identify related risks. No detail—or stakeholder—was too small, given that the project also included smaller lanterns.

Everyone [was] under intense pressure to get the job done. But they rallied. Good planning was critical to our success.”

—Natalie Scobie, Taronga Zoo, Sydney, Australia
of echidnas, cicadas, chameleons and spiders, along with thousands of tiny lanterns made by local students.

“A detailed how-to document was produced and distributed to schools with the lantern-making kits so the children could follow each easy step while building their lanterns,” she says. “The school lanterns were a big hit with visitors.”

Engaging all stakeholders from the start helped Ms. Scobie’s team secure buy-in and identify and solve problems from all angles. For example, the team learned that its decision to place a lantern across a little-used path blocked a construction crew’s access to an unrelated zoo project site. The team also discovered that turning the lights on at dusk—as it originally planned—would startle animals. So lights were turned on an hour before dusk to ease the transition.

In the end, the event kicked off on schedule on 27 May to rave reviews—thanks to the tireless efforts of the project team, Ms. Scobie says.

“Everyone knew what they needed to do so there were no surprises. Good project management from the beginning helped make it all work.”