PETER WALKER
Barangaroo Reserve in Sydney, the design of a lifetime

TRAUMA RELIEF
The military’s therapeutic landscape

LIVING SIGNPOSTS
Trail trees that once marked the way

RUTH SHELLHORN
A neglected legacy in California

BARANGAROO RESERVE
An advocacy of materials and detailing by FPR Landscape Architecture, page 78.

FEATURES
PETER WALKER’S POINT

THE BARANGAROO RESERVE TRANSFORMS SYDNEY HARBOUR’S OLD INDUSTRIAL LANDSCAPE.

BY GWENETH LEIGH, ASLA
When I was a child growing up in the suburbs of Philadelphia, my understanding of landscape was one of changing purpose. Cornfields were converted into housing subdivisions and office parks. Old winding roads were straightened, thickened with extra lanes, and punctuated by traffic lights. It was the small discoveries—an arrowhead in the garden, a bullet lodged in a tree—that revealed the older stories of these fractured landscapes. The layers of roads, power lines, and strip malls made any trace of a site’s earlier history difficult to imagine.

But what if we were to allow a landscape to break free from the confines of concrete curbs, smooth out its industrial wrinkles, and pluck off architectural blemishes in an effort to recapture a semblance of its younger, more picturesque self? Where injections of earth and rock serve as the Botox for an aging landscape, erasing the creases of human development in favor of a more natural topography. So begins the story of Barangaroo Reserve in Sydney, Australia.
This new headland park, opened in August 2015, transformed 14 acres of a flat concrete shipping terminal into an approximate vision of Sydney’s Botany Bay circa 1788. It is the first stage of a $6 billion (AUD), 54-acre urban renewal development planned as a major extension of Sydney's central business district to bring recreation, housing, shopping, and offices down to the water’s edge.

Barangaroo’s original headland evolved from being an important hunting and fishing area for the Aboriginal Cadigal people to becoming a hub for Sydney’s burgeoning shipping industry. Since the 1830s, successive development of the shoreline required land reclamation and the cutting back of the existing sandstone cliffs. However, as time passed, and the size of commercial ships grew, port facilities were focused elsewhere given the inability of the site to accommodate modern commercial ships. In 2003, the New South Wales government slated the area for redevelopment into parklands and commercial space; existing stevedoring companies were provided three years to relocate, leading to the site’s industrial demise by 2006.

Designed by Peter Walker, FASLA, of PWP Landscape Architecture, in association with the Australian design practice Johnson Pilton Walker (JPW), Barangaroo Reserve is significant in how it knits an enormous piece of...
neglected waterfront back into Sydney’s public realm. Standing along the generous outcrop of rocky foreshore, with the waves tickling your toes and fig trees framing the sky, you can almost imagine Captain Arthur Phillip sailing past on his way to establish Great Britain’s famous penal colony along Sydney’s modern shores. This vision is largely thanks to the cunning and uncompromising resolve of the project’s champion, the former Prime Minister Paul Keating, who left office in 1996, appointed himself the guardian of Sydney’s harbor, and battled his way toward Barangaroo’s delivery for more than a decade.

Keating has a reputation as one of Australia’s most cultured prime ministers. He is self-educated in architecture, and has a passion for French Empire clocks and a euphoric appreciation of Gustav Mahler. However, his ability to craft words in ways that can both flog...
BARANGAROO — MASTER PLAN (DETAIL)
and amuse has also made him one of Aus-
tralia’s most feisty political warriors. When
Sydney’s Lord Mayor, Clover Moore, was
delivered a petition with the signatures of
11,000 concerned Sydney residents request-
ing an inquiry into Barangaroo’s develop-
ment, she felt obligated to table the appeal in
Parliament. In response, Keating ripped into
her for bowing to “sandal-wearing, muesli-
chewing, bike-riding pedestrians without any
idea of the metropolitan quality of the city or
what Sydney would lose if Barangaroo were
to fail.” When Keating refused to allow cruise
ships to dock at Barangaroo, Carnival Aus-
tralia’s executive chairman, Ann Sherry, told
him: “Paul, the trouble with you is you don’t
go on cruises.” To which he quickly replied,
“Well, Ann, I don’t own a wheelchair.”

Like a terrier to a bone, Keating for years
continued his pursuit of the headland by fi-
nessing his way from spectator to eventually
becoming chairman of both the Public Do-
main and Design Review committees for the
Barangaroo development. An international
design ideas competition was arranged to
ensure public consideration of the site, as
many different agencies were vying to take
ownership of it. However, there was never
any guarantee that the winners of the design
competition—the Sydney firms Hill Thalis,
Paul Berkemeier Architect, and Jane Irwin
Landscape Architecture—would be given
the job, and they weren’t. In 2008, Keating
sent a letter to Morris Iemma, the premier
of the New South Wales government, ac-
companied by a sketch drawn up by Keat-
ing himself, which stated the premier’s and
the treasurer’s agreement to allow Keating
to have political authority and provide the
“broad guidance needed” for the design and
delivery of the headland.

Keating’s resolve to shed the site’s industrial
maritime heritage in favor of developing it as a
natural domain and headland stirred the ire of
many within the Sydney community. In 2011,
the Australian Institute of Architects’ New
South Wales Chapter put forward an alterna-
tive scheme they dubbed A Better Barangaroo,
put together by a group of 57 independent ar-
chitects and urban planners, which addressed
several attributes of the 54-acre site—including
a rethinking of Keating’s headland park. None
of the critique fazed him. “Naturalism has a
place in urban design; we don’t have to have
parks which are squares, flat, or worse,” Keat-
ing says. “The whole profession was opposed
to Barangaroo—the Institute of Architects in
Sydney all signed up to oppose it. And they all
now love it,” he chuckles. “I’ve taught them
something about landscape—something they
should have known.”

Keating’s dogged pursuit of Barangaroo has
been part of his broader ambition toward
Right
Hard edges and sharp angles: A long concrete slab dominated the Barangaroo site before construction.

Opposite
Today a curving shoreline includes a new bay rimmed in local sandstone. The old slab is still faintly visible underwater, a ghost of the industrial past.
ABOVE
Peter Walker’s early sketch for sandstone design at Barangaroo Reserve.
Barangaroo Reserve sandstone drawing. Most sandstone in the project was quarried and reused on site.
re-creating the constellation of Sydney’s naturalistic headlands to emulate the way the harbor existed during European settlement. At the center is Goat Island—also known as Memel, the aboriginal word for the pupil of the eye—which was the central place from which natives would canoe to the surrounding headlands of Ballast Point, Balls Head, and Barangaroo. “This was the intimate part of the harbor where the Aboriginal people lived,” Keating says. “For a city of five million people, to be able to recover that natural intimacy, which no other great city has, is a thing to do.”

Keating has been very aware of the negative impact that European settlement continues to wreak on Aboriginal peoples’ traditional way of life. During his administration in the 1990s, indigenous persons’ yearly income was half the national average, infant mortality was three times higher, and jails had 29 times more Aborigines than non-Aborigines in custody. These statistics have not lessened with time. Today, Australia’s indigenous populations have a life expectancy that’s a decade less than non-indigenous people; they represent only 2 percent of the population, yet compose more than a quarter (27 percent) of Australia’s prison population. Keating’s historic Redfern Park Speech, delivered in 1992, was a powerful reflection of the problems that modern society had inflicted on Australia’s indigenous people:

It begins, I think, with that act of recognition. Recognition that it was we who did the dispossession. We took the traditional lands and smashed the traditional way of life. We brought the diseases. The alcohol. We committed the murders. We took the children from their mothers. We practiced discrimination and exclusion. It was our ignorance and our prejudice. And our failure to imagine these things being done to us. With some noble exceptions, we failed to make the most basic human response and enter into their hearts and minds. We failed to ask, how would I feel if this were done to me? As a consequence, we failed to see that what we were doing degraded all of us.

When PWP and JPW were brought onto the project in 2010, Keating worked closely with the team members to ensure they understood the cultural and physical significance of the site. He took the design team onto his own boat for the better part of a day, looking at Barangaroo and the other headlands from the water. It was important to him that the team understood what had been lost at the site by comparing it to other headlands that were still intact, and he emphasized the need to reconnect Barangaroo back into the fabric of the city—all the way down to the water’s edge. Walker also understood Keating’s desire to create a design that didn’t focus on creating, as Walker says, “another big white building to make a statement about Aboriginal life.”

To fully understand what it was that the indigenous Australians once had—and what they had lost—required a monumental landscape intervention. So Walker set about to re-create the headland.
MY FIRST VISIT TO THE SITE began early one Saturday during a morning full of intermittent rain, but this did not faze the many people who jogged, meandered, and even sang their way through the site (thank you, random mariachi band). I sat perched on one of the sandstone blocks along the foreshore and watched for hours, fascinated. There were painters and picnickers, clusters of mothers pushing strollers; there was a yoga group perched at the top of the headland in precarious positions, as well as occasional elderly visitors pulling themselves along with a walker or cane. Children accompanying their parents walked anywhere but on the path—most preferred to balance their steps along the meandering 1836 Wall (marking the original coastline of that year), while others darted off and scrambled over the rocks along the water’s edge. The site had been open for two months, and it was obvious how readily the public had embraced it.

I bemusedly watched a boy no older than five brandish a formidable plastic sword with one hand while another straightened his paper pirate’s hat. “No, Dad, you stand down here!” he shouted. The boy was insistent, perched atop a slab of sandstone along the upper edge of the foreshore. Hands raised in defeat, a weary-looking father stepped down to the lowest embankment of sandstone until

RIGHT
Barangaroo’s foreshore promenade passes grassy “beach” areas that allow visitors access to the water.
HEADLAND PARK — HERITAGE SEAWALL PLAN

HEADLAND PARK — HERITAGE SEAWALL ELEVATION

BARANGAROO HEADLAND — STONE MODEL A

HEADLAND FORM STUDY — PREFERRED OPTION

LEFT
Design models tested placement of sandstone blocks and their dynamics with the tide.

RIGHT
A three-dimensional design study of soil volume and headland geomorphology.

EXISTING WALL CONDITION

PROPOSED WALL MODIFICATIONS

OPPORTUNITY TO CREATE NOTCHES WHERE DAMAGE TO THE EXISTING WALL HAS OCCURRED

FILL IN NOTCHES WITH HALF HEIGHT BLOCKS TO MEET PROPOSED GRADE
BEHIND HISTORIC WALL FOR AREAS WHERE HANGING PLANTS MOVE FORWARD
AND HISTORIC BLOCKS MOVE BACK INTO THE PLANTING AREA AS SHOWN IN PLAN

FINISH GRADE BEYOND NOTCH FOR PLANTING AT GRADE

NOTCH WIDTH VARIES

PROPOSED WALL MODIFICATIONS

MODEL A – LOW TIDE

MODEL A – HIGH TIDE
EAST–WEST HEADLAND SECTION

the way Sydney residents refused to be... One of Walker's early observations was... a remnant of maritime days past.

Noted within Darling Harbour, Baranar... Delighted, the boy jumped in place with ex... NOV 2016

BELOW

Some 48,000 cubic yards of Sydney's... Quay is a place of green curves, rock... nest to a distance by an elevated seawall. This site once had strong industrial edges of its own, but most have been carefully... Sandstone was quarried... yards of Sydney's foreshore placements.

The blocks measure... The color and unique markings of the sandstone represent the natural variation that occurred during... The quality of the sandstone extracted on site exceeds the required strength and is embodied with a huge variety of character... The color... After about a year of working with Troy, he knew our design intentions well, and we could shift our focus to stone selection for the most....

TROY'S SANDSTONE

The vast array of stone...close to the shoreline, each slab oriented...Bundanoon, the sheer quantity of stone that...in Sydney. The tradition was passed down...Troy Stratti, concerning...in order of the rock...as there were poor iron deposits, prehistoric shells, and other foreign stone deposits. This was a welcome surprise. When the first...were inspected, we knew right away that we had something unique.

The coloration and unique markings of the sandstone are the natural variation that occurred...For example, the sandstone wall that aligns along the edge of the site was the shoreline in that year. For the 1836 Wall, we needed to create a consistent...than had the same...would be visible to the majority of people in the park. The stones were cut out...surfaces. The only discretion left to the equipment operator was which side the block would face upward and whether to flip the stone...We carried out software of the...in the design...of the sky—sunrise, sunset, nighttime, and...Acknowledging mistakes as an unconscious decision, allowed ourselves time to reflect and brainstorm about the possible solutions for constructive and superior aesthetic outcomes.

The sandstone site at Barangaroo is large because it follows the sandstone tradition of Sydney. The tradition passed down to Troy Stratti, whose company—he worked with his father, Sam Stratti—involved the extraction and fabrication process in Sydney. Troy once said to me that he felt he had been preparing...His entire career for the opportunity and challenge of Barangaroo Reserve. The realization of the...——DAVID WALKER, FASLA

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() LANDSCAPE ARCHITECTURE MAGAZINE
around the harbor where people attempted to fence off the waterfront, everybody just jumps over the fence and they fish. The kids go into the tidal pools. There’s a whole waterfront life of the modern Sydneysider,” Walker says. It was obvious that issues of waterfront access and movement around the periphery of the site needed to take priority. But understanding how to shape and reconstruct a new headland around which to choreograph this activity was another challenge.

Because there were no surveys of the original headland, the design team studied historic maps and French landscape paintings of the area. From these, computer models were generated that layered the terrain into different shapes and gradients. Existing rock outcrops on the seabed floor were also roughly mapped and archaeologists consulted to better understand the geologic processes that had affected the headlands overtime. Based on this research, the shape of the headlands approximately
reflects the 1865 shoreline. This was affirmed when an old slipway from the 19th century was uncovered during construction.

Once the shape of the headland had been determined, the next challenge was to construct the steep 60-foot cliffs in a way that made them look like an approximation of a naturalistic philosophy. 

“I explained that naturalistic is a term which doesn’t describe nature, but it describes the nature of nature. You’re not copying nature; you’re representing it,” Walker says. “And for a long time Paul would say, ‘Let’s talk about nature of nature. You’re not copying nature; it doesn’t describe nature, but it describes the possibility of nature.’” Keating adds. “So Walker proposed to Keating that the site be designed using a naturalistic philosophy. “It was important that the shape of the headland facilitated connections along the waterfront and Hickson Road (the original main road leading to the shipyard), but it also needed to be high enough to link back into the road leading to the shipyard), but it also needed to be high enough to link back into the road leading to the shipyard.”

It was important to the design of the site that the headland facilitated connections along the waterfront and Hickson Road (the original main road leading to the shipyard), but it also needed to be high enough to link back into the road leading to the shipyard. “The goal was to have a seamless connection, so no matter where you entered, you would form part of the city at that elevation,” Walker says. Of particular concern was to connect the broken streets of Millers Point, a residential community whose ragged, high promontory were originally the site of wooden windmills, but were later sheared off during excavation of the headland in the late 1860s and replaced with terrace houses for workers employed at the docks below. For decades, residents in the town houses here—many of which were low-income government housing—only

A HYPERLOCAL SOIL RECIPE
The soil formula for Barangaroo Reserve was designed to support the extensive plantings of native vegetation on the site. Simon Leake, the principal soil scientist of SESC, Australia, which acted as the project’s main soil consultant, explained that his team developed the formula. This narrative originally appeared on the website of SESC, and has been adapted and updated.

The Barangaroo Headland Park landscape was planned to use almost entirely locally recycled resources to make soils suitable for the sensitive Sydney sandstone flora and the public park turf areas. The concept was first used at Sydney’s Olympic Park’s wetland and its sandstone, and it was found: the natural recycled resource in Sydney, was successfully used to create soil profiles for this purpose.

Building on that experience, our firm of soil scientists, SESC, Australia, came up with a concept design for the completely reconstructed soils needed for the Headland Park at the early detailed design phase. This original concept is shown in Figure 1 (below right).

In this concept, the main materials to be used were crushed sandstone originating from building excavations in Barangaroo South commercial developments, recycled sand from building excavations, recycled glass from building excavations, recycled glass from sandstone quarrying, and composted soil from recycled garden waste collection.

These commonly available recycled resources could be used to make the mulch layer or “O” (for organic) horizon, analogous to the o" horizon, or topsoil horizon, some of the lowest levels of nutrients and general soil chemistry. We examined the profile and measured the levels of nutrients and the general soil chemistry. We found the levels of nutrients to be very low—low levels of phosphorus—around 20 mg/kg of total phosphorus in sandstone and 60 to 80 mg/kg in the ‘bealy’ or topsoil horizon, some of the lowest levels in the world. Calculations showed that only around 10 per cent by volume of green waste compost would be required to achieve this.

In a series of pot trials growing a range of sandstone flora, we determined that the sandstone range was, by volume, 5 per cent compost for the very sensitive sandstone heath areas, 10 per cent for the eucalyptus and woodland areas, and 20 per cent for the turf and trees in the meadow areas. The compost provides all the nutrients needed, apart from nitrogen. Just 5 per cent by volume of compost is sufficient to establish a sandstone heath and scrub with no other fertilizers needed. Sandstone needs no organic matter and is even lower in nutrients.

We now had the soil profile concept and had calibrated and measured how much nutrition each plant needed. All we now had to do was finalise the cross sections. An early diagram of the sandstone terrace facies (opposite) illustrates how this was done for contractors tendering on the project could see how it was to be constructed.

The landscape belowground, or the soil landscape, at Barangaroo was carefully worked out to mimic the natural soil profile and plant profile, and this was done to support a vegetation type with unique requirements for healthy growth. It does so by using almost 100 percent recycled material sourced from in and around Sydney from building sites, excavations, sand and glass recyclers (“glass sand”, made from crushed recycled glass, constituted some of the sand requirement), and, of course, the garden and green waste produced by Sydney households.

The concept was installed pretty much as designed, although it is pretty hard to get all the recycled materials needed. In the suburbs, we used recycled crushed glass sand, but in the topsoil we were able to use some quartz sand. All the crushed sandstone was recycled from both the Barangaroo excavations as well as (through an exchange with a co-contractor), in the large construction company’s other sandstone excavations. We now had the soil profile concept and had calibrated and measured how much nutrition each plant needed. All we now had to do was finalise the cross sections. An early diagram of the sandstone terrace facies (opposite) illustrates how this was done for contractors tendering on the project could see how it was to be constructed.

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PLANTING PLAN — UNDERSTORY

Acacia floribunda (White Sally wattle)
Acacia longifolia (Saline wattle)
Acacia myrtifolia (Red-stemmed wattle)
Acacia terminalis (Sunshine wattle)
Acacia ulexifolia (Pinkly Moses)
Acmena smithii (Lily pilly)
Allocasuarina littoralis (Black she-oak)
Banksia marginata (Silver banksia)
Banksia raker (Gossamer banksia)
Banksia spinulosa (Harpin banksia)
Bauerea rhizophora (River rose)
Boronia ledifolia (Showy boronia)
Cassia sarricholea (Black wattle)
Collistemon linearis (Narrow-leaved bottlebrush)
Ceratopetalum gummiferum (New South Wales Christmas bush)
Correa alba (White correa)
Correa reflexa (Common correa)
Cyathea australis (Rough tree fern)
Dillwynia retorta (Heathy parrot pea)
Dodonaea triquetra (Large-leaf hop bush)
Doryanthes acuminata (Gymea lily)
Elaeocarpus reticulatus (Blueberry ash)
Eriostemon ausitanus (Pink wax flower)
Exocarpos cupressiformis (Cypress cherry)
Elaeocarpus ferrugineus (Cheese tree)
Grevillea boritata (Grey spider flower)
Grevillea linearifolia (Linear leaf-grevillea)
Grevillea sericea (Pink spider flower)
Hakea dactylifera (Finger hakea)
Hakea teretifolia (Needlebush)
Hibiscus tiliaceus (Cottonwood hibiscus)
Isopogon anemonifolius (Broad leaf drumsticks)
Lambertia formosa (Mountain devil)
Leptospermum juniperinum (Pinkly teatree)
Macrozamia communis (Burrawang)
Melaleuca hypericifolia (Bottle bush)
Melaleuca nodosa (Pinkly-leaved paperbark)
Notelaea longifolia (Large mock-olive)
Olearia tomentosa (Toothed daisy bush)
Oxalothus popsiphiolus (Native bleeding heart)
Paraxoa levis (Broad-leaved geebung)
Persoonia spp. (Cheesewood)
Telopea speciosissima (Waratah)
Tristania laevigata (Water gum)
Westringia fruticosa (Coastal rosemary)
Grasses are among the native plants used at Barangaroo.

The existing harbor headlands had an underlaying base of preexisting stone to support the sheer cliffs. Walker’s team did not have to work with. They needed to achieve stability without the benefit of existing geology. The solution was to establish a series of terraces made of hollow precast concrete units that were filled with aggregate and tied back into the hillside. The units were colored with a sepa finish to help them blend in as the plantings grew and provided greater coverage. Behind these walls, the intention was to prevent backfill using recycled fill from nearby development works—approximately 10 percent of the plants—amazing. The root crown.

What are some of the tougher ones to satisfy?

LAM: So far you’ve seen a failure rate of about 1 percent of the plants—amazing. The norm, you say, is more like 10 percent to 15 percent. What will be the biggest maintenance challenges ahead as the park seasons and conditions change?

SP: We will do annual soil testing that will determine the fertilizing program and the quantity and composition of fertilizer to suit the indigenous vegetation. There will be maintenance and irrigation from on-site retention storage for at least another 12 months, when consideration will be given to allowing the site to rely on natural rainfall events unless there are long or extensive periods of drought. We will control pests and disease, which at this stage of plant establishment are likely to be maintenance and irrigation from on-site retention storage for at least another 12 months, when consideration will be given to allowing the site to rely on natural rainfall events unless there are long or extensive periods of drought. We will control pests and disease, which at this stage of plant establishment are likely to be

SP: History indicates that the early Europeans who arrived in Sydney included botanists. Jospeh Banks, Daniel Solander, and John White discovered and named many new plants that had never been seen before in England. Their findings were recorded, resulting in accurate records that are still available today. The Sydney Royal Botanic Garden’s ecoregion is that of the cutaway. How many of the species are endemic to a very small area around the harbor? How many are threatened or endangered?

LAM: A terrace planting.

Below The bush walk is defined by a Cor-Ten steel wall.

The design of Barangaroo Reserve’s waterfront area was easily the most time-intensive part of the headland’s creation. Local Sydney stone yards were initially investigated to provide the sandstone, but that would have required carving by highly pressurized water jets to give the stones the desired naturalistic appearance. However, a fortuitous discovery had been to backfill using recycled fill from nearby development works—approximately 10 percent of the plants—amazing. The root crown.

Self-supporting, good stem taper, crown symmetry, branch and stem exclusions, root direction, root ball occupancy, and height of the root crown.

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SP: We will do annual soil testing that will determine the fertilizing program and the quantity and composition of fertilizer to suit the indigenous vegetation. There will be maintenance and irrigation from on-site retention storage for at least another 12 months, when consideration will be given to allowing the site to rely on natural rainfall events unless there are long or extensive periods of drought. We will control pests and disease, which at this stage of plant establishment are likely to be
BARANGAROO RESERVE — “CUTAWAY” REVEALED

Over the span of one year, 10,000 blocks about four feet wide and up to 16 feet long were strategically hewn from beneath the space of the Cutaway with the extraction pit laid out in the shape of the site’s required parking garage. Because of Sydney Harbour’s geological fault line of 20 degrees northeast, the sandstone harvested from the site sheared naturally when hewn from this angle, providing a naturalistic rock face. No jet-spraying of the rocks would be needed.

Each of the extracted sandstone blocks was labeled, sized, and bar-coded to identify where it should go in the foreshore. This data was entered into a custom-made 3-D computer modeling program that mapped out the waterfront and ensured each individual block could be slotted into place like a giant 3-D puzzle, while also certifying that fall heights and joint widths met Australian safety standards. Initially, the blocks were limited to 75 different sizes, but this number was increased to more than 200 as it afforded...
The cliff face reveals openings that allow daylight into the cavernous space of the Cutaway.

Art installations are among the events held in the Cutaway.
BARANGAROO — SLOPE STABILIZATION SECTION

Small staircases connect different levels of the bush landscape.
A glass elevator and sandstone staircase define the café terrace at the bush walk entrance.
more flexibility in the foreshore design. Each was set upon a bed of gravel and basalt designed to accommodate tidal movement.

The design team faced a lot of unknowns when it came to the construction of the waterfront. “We asked a lot of bold questions and kept getting bolder answers in response,” Walker says. Troy Stratti, a Sydney sandstone extraction expert, was brought onto the project team to provide guidance on how to best use the extracted sandstone. The discussions between the design team and Stratti were like a tennis match that played along through the development of mock-ups for building the waterfront. Eventually, Stratti developed a 1:20 scale prototype to test the foreshore design and created unique tools for handling the 11- to 13-ton blocks that allowed each one to be placed in close proximity to another. The variation in color and markings between the individual stones required an intensive amount of time and coordination between PWP and Stratti to determine the best way to distribute the sandstone blocks across the site.

While establishing the terraces and rocky foreshore was critical to the headland design, so was the need to incorporate a planting...
strategy to shroud the headland with vegetation using a 200-year-old planting palette. There was also heavy pressure to deliver a landscape that provided instant impact, particularly when it came to hiding the concrete terraces. An earlier headland park initially championed by Keating, Ballast Point Park, had been established using tubestock, resulting in a stark landscape during the park’s early years, which drew attention to the hard lines and extensive walls used throughout the site. The park still draws Keating’s ire. “It’s an archie park, done by an architect . . . terrible, all hard concrete design,” has been his most frequent critique. To avoid a similar outcome, Stuart Pittendrigh, a landscape architect and horticultural consultant who specializes in Sydney’s native botanic species, joined the design team in 2010 to help build the bush.

Pittendrigh met me on site early on a Monday morning after what had been a blazing weekend, with temperatures soaring over 100 degrees Fahrenheit. He had been informed that a marine vessel had sprayed saltwater toward the northwest corner of the site in an effort to cool off visitors over the weekend; he wasn’t happy about it. “The water saturated all my plants,” he lamented. “Apparently the staff has been washing down the furniture and light poles, getting all the salt off.” When we made our way to the affected area, many of the Hardenbergia vines were already browning off. “I’ll have to speak to the BDA [Barangaroo Delivery Authority] about this,” Pittendrigh said, his brow furrowed.

As the lead horticultural consultant on the project, Pittendrigh has been deeply involved...
in the sourcing, design, production, and installation of plants across the site, but more in the capacity of watching over the works rather than superintending the job. Since Barangaroo’s completion, he has been commissioned to monitor the park over the next two years, spending time twice a month to observe maintenance contractors, address concerns, and report back to the BDA. After practicing for 47 years, it’s the first time he’s been tasked with undertaking such follow-up work on a project.

Walking through the site, Pittendrigh gestured to a cluster of grevilleas that were flowing over the rock walls and onto the rim of the paths. “Maintenance wanted to shear them off initially, said they were trip hazards,” he said, his eyes sparking. “I gave them a piece of my mind.” Farther along, he pointed out a fig that’s more compact and squatty in shape. “You can tell that one was container grown from birth,” he commented, then paused by some of the larger fig trees at the water’s edge, their sprawling habit an indicator the trees were transplants from another site. To maximize visual impact by the opening date, 16 mature fig trees from southern Queensland and 89 cabbage palms had been relocated into the park. As a way to avoid breakage of the branches, particularly during transport, the trees were deprived of water for a few days before transport, which allowed the leaves to wilt and made them more flexible. The trees were then heavily soaked once planted as a way to help them recover.
Plant losses at the site have been minimal, with just 1 percent of the plants failing—a success rate Pittendrigh is incredibly proud of. (“Not bad out of nearly 76,000 plants,” he says). Out of the 84 species integrated into the site, only five weren’t indigenous to Sydney Harbour. A total of seven plant communities were planted according to their edaphic position in the landscape with regard to topography, aspect, environment, and moisture requirements. The subtle variations of these plant communities are noticeable when walking through the site, from the rich undergrowth nestled within the steep terrain of the damp southeast slopes of the gully forest to the smaller, more spindly plants enduring the windy and exposed conditions of the ridgeline woodland 60 feet above at the promontory.

Although the site had been open for only three months, the vegetation was thriving thanks in part to the careful attention to...
the soil substrate of the plantings. As a way to overcome common interface problems ("plant shock"), great effort was made to grow the nursery plants in the same soil as was present on the site. A soil scientist, Simon Leake, developed a mix that simulated the weathered Hawkesbury Sandstone soils commonly found in Sydney by taking the waste sandstone from the site excavations and crushing it into a fine aggregate. Added to this was glass from recycled bottles, with fragments reduced to the size of a match head to add silica content. Organic material and nutrients were limited to between 4 percent and 10 percent of the mixture, while phosphorus was excluded completely, as Australian plants tend to resent it, and Leake figured it would build up naturally over time.

In addition to careful soil planning, Pittendrigh also took great effort in establishing the trees by developing them with a very shallow—but broad—root plate. Some of the planting containers were eight to 10 feet in diameter, with root tips at a maximum depth of 18 to 32 inches. The technique has been highly successful, as the root plate allowed the trees to establish quickly and withstand gale-force winds off the ocean. Pittendrigh prides himself on an encounter he had with two engineers visiting the site who were astounded to learn that the trees didn’t have any additional anchoring keeping them rigid; so far, there haven’t been any blow downs.

Toward the end of our walk, Pittendrigh meandered down to a fig tree close to the water’s edge where a main branch dangled...
unnaturally at a sharp angle. “This is the first tree we planted,” he mentioned while gingerly inspecting a break halfway down the limb. “Every time I come here, there’s another badly damaged branch. Kids play on it—a crying shame.” Looking at the surface around his feet, he noticed some tendrils of green emerging. “Ground covers—like an edible spinach. Digs out in winter.” I couldn’t help but smile. Keating may have been the champion of Barangaroo’s headland, but Pittendrigh was certainly its protector.

SOME WITHIN THE AUSTRALIAN design community are still unconvinced that a design that discarded the site’s industrial heritage was the best possible outcome. But the success of Barangaroo Reserve is a testament to the talent and dedication of its many midwives—and a budget in excess of $250 million (AUD). And without a Keating counterpart to drive an alternative option, movements against the headland design failed to gain traction. “The aspirations of the designers are important,” Pittendrigh says, “but the main function of a park is to meet people’s needs, and this place does that. People feel relaxed in this space; no one’s in a hurry, and they’re strolling around and taking it in.”

For Walker, the success of a project is like a work of art, where the idea needs to catch people’s attention—and their imagination. “The most important thing you have to do,” he says, “is make it good enough so people love it.” Based on the constant use of the headland so far, the park is doing its job. It’s a place where visitors can take cultural tours to explore the site’s Aboriginal history. It’s where Sydneysiders can go to stretch their legs, touch the tides, and taste the salt air. And, perhaps most important, it’s where a weary father can take his young son to play pirates by the water—and be awakened by the vision it reveals.

GWENETH LEIGH, ASLA, IS A LANDSCAPE ARCHITECT AND FREELANCE WRITER BASED IN CANBERRA, AUSTRALIA. CONTACT HER AT GWENETH.LEIGH@GMAIL.COM.

Project Credits
CLIENT
BARANGAROO DELIVERY AUTHORITY, SYDNEY.

LEAD DESIGNER
PWP LANDSCAPE ARCHITECTURE, BERKELEY, CALIFORNIA.

LANDSCAPE ARCHITECT OF RECORD
JOHNSON PIL TON WALKER, SYDNEY.

ARCHITECT
WMK ARCHITECTURE, SYDNEY.

ACCESSIBILITY CONSULTANT
MORRIS GODING, SYDNEY.

ARBORIST AND HORTICULTURIST
NORCUE, SYDNEY.

CHIEF STONEMASON AND QUARRY OPERATIONS MANAGER
TROY STRATTI, SYDNEY.

CIVIL AND STRUCTURAL ENGINEERS
ROBERT BIRD GROUP, SYDNEY, AND AURECON, SYDNEY.

CONSTRUCTION MANAGER
ADVISIAN, SYDNEY.

GENERAL CONTRACTOR
BAULDERSTONE (NOW LEND LEASE), SYDNEY.

GEOTECHNICAL ENGINEER
DOUGLAS PARTNERS, SYDNEY.

GRAPHICS, SIGNAGE, AND WAYFINDING DESIGNER
EMERY STUDIO, MELBOURNE, VICTORIA, AUSTRALIA.

HISTORIC INTERPRETATION CONSULTANT
JUDITH RINTOUL, SYDNEY.

HISTORY AND ARTS CONSULTANT
PETER EMMETT, SYDNEY.

HYDRAULIC ENGINEER
WARREN SMITH & PARTNERS, SYDNEY.

LANDSCAPE CONSTRUCTION OBSERVATION MANAGER
TRACT CONSULTANTS, NORTH SYDNEY.

LANDSCAPE CONTRACTOR
REGAL INNOVATIONS, ANNANGROVE, NEW SOUTH WALES, AUSTRALIA.

LIGHTING ENGINEER
WEBB AUSTRALIA GROUP, SYDNEY.

MARINE ENGINEER
HYDER CONSULTING (NOW ARCADIS), NORTH SYDNEY.

PLANT PROCUREMENT NURSERY
ANDREASENS GREEN, MANGROVE MOUNTAIN, NEW SOUTH WALES, AUSTRALIA.

SOIL SCIENTIST
SESL AUSTRALIA, THORNLEIGH, NEW SOUTH WALES, AUSTRALIA.

TRANSPORTATION ENGINEER
HALCROW, SYDNEY.

OPPOSITE
Barangaroo’s sandstone joins the harbor to the shoreline—and the site’s preindustrial past to the present.