SEKISUI HOUSE

FRASERS PROPERTY

INTRODUCING

HALO

Jennifer Turpin and Michaelie Crawford

CITY OF SYDNEY

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HALO

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CONCEPT

HALO

Jennifer Turpin and Michaelie Crawford

Turning and tilting with the energy of the wind, *Halo* hovers in finely tuned counterbalance.

The 12 metre diameter tapered yellow ring pivots off-centre atop a 13 metre high tilted silver mast. Though large in size it appears weightless and whilst apparently precarious it is perfectly balanced. The entire weight of the carbon fibre ring and arm rests on a ceramic bearing the size of a small marble.

Halo's otherworldly presence and uncanny motion play with perception to suspend disbelief. Floating overhead, ring and arm appear at once connected and disconnected. Perspectival distance doubles back on itself as *Halo's* eccentric undulating revolutions mesmerize and intrigue.

Collaborating with nature, *Halo* responds to winds of the moment. Gentle breezes set its slow, off-centered rotations in motion, whilst gusts and eddies tip it off the horizontal to pitch and roll. Stronger winds quicken the rotations and increase the arc of tilt until *Halo* self dampens and is progressively braked in more extreme weather events.

Inspired by the history of the site itself, *Halo* draws upon the language and processes of the old brewery. Giant, circular brewing-vat support structures combine with the endless stirrings of brewing alchemy and the tipsy effects of beer to inspire sculptural form and fluid motion.

At the heart of Central Park's public domain near the cross roads of Balfour Street's north-south and Irving Street's east-west axis, *Halo* stands between the heritage, the contemporary and the building-in-progress. *Halo's* floating encircling motion draws us inward and gestures outward to the space and energy of the environment beyond.

Ring supports for brewing fermentation vats, Brewery Yard building during decommissioning 2008.
Photo by Martin Van der Wal

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DESIGN DEVELOPMENT

Model making and design
Turpin + Crawford Studio

Research and development: *Halo* has been three years in research, design, testing and construction since its original conception. During this time the artists have worked closely with a team of specialist engineers, designers and fabricators to achieve their desired sculptural form and quality of motion.

Main image: *Michaelie Crawford & Jennifer Turpin, Turpin + Crawford Studio Chippendale, 2010*

Bottom left image: *Peter Turpin at Turpin + Crawford Studio, Chippendale, 2010*

Bottom right image: *Konrad Hartmann 3D computer modelling, Turpin + Crawford Studio, Chippendale, 2010*

Photos by Ian Hobbs Media

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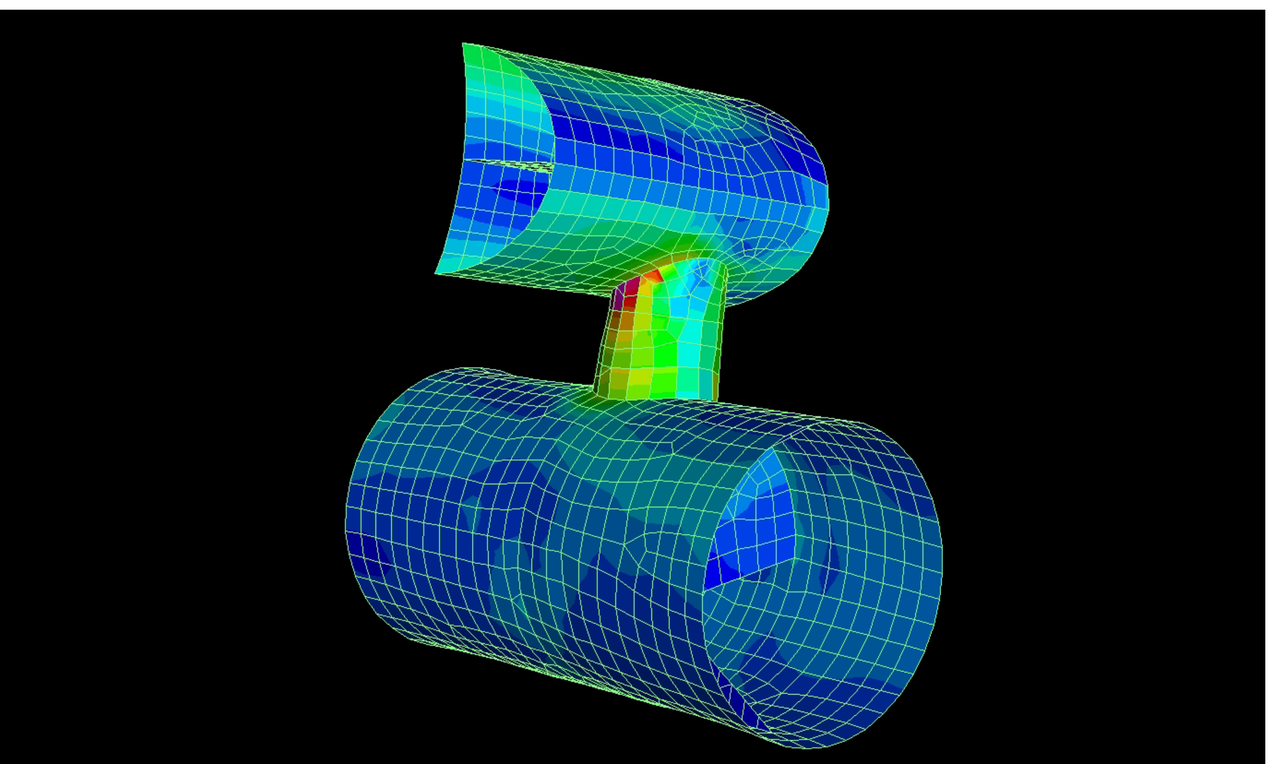

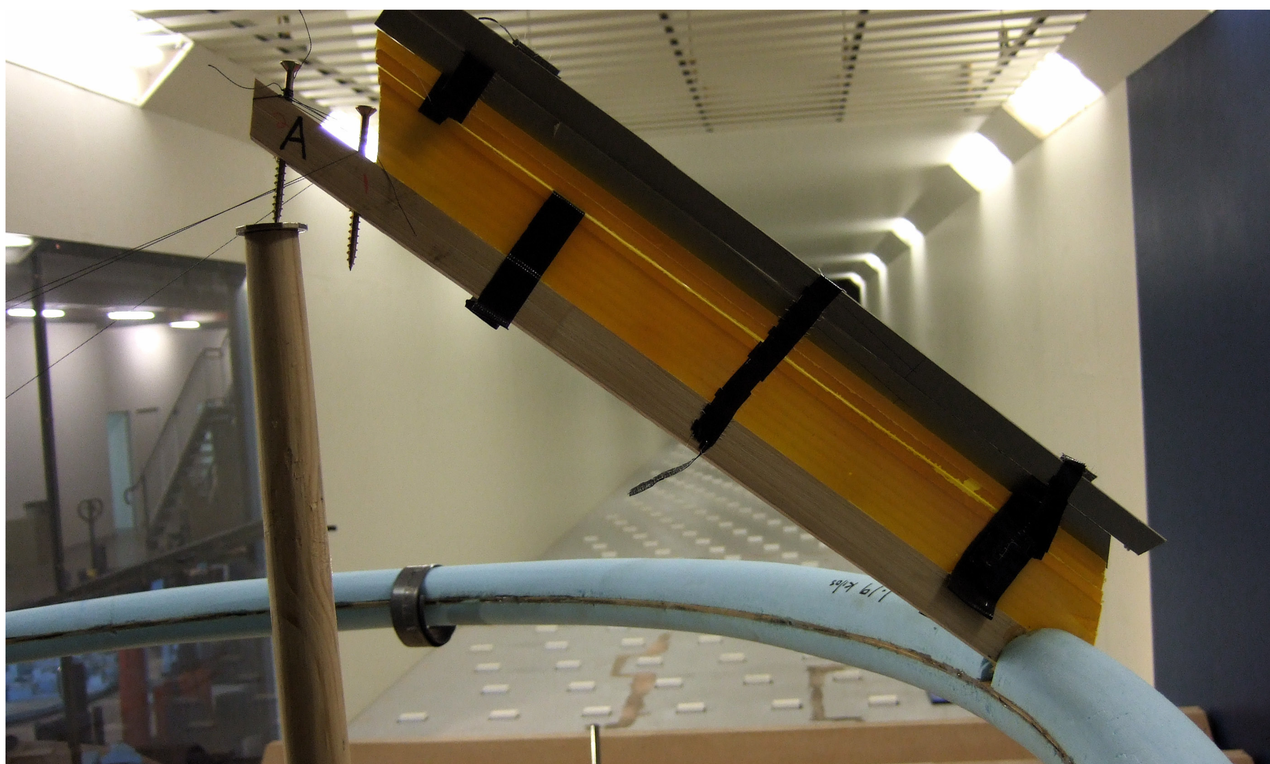

DESIGN DEVELOPMENT

Wind tunnel testing and structural engineering

Wind engineering and testing: Extensive visual, dynamic and quantitative load testing of numerous scale models was carried out in the wind tunnel at CPP Wind Engineering in St Peters.

CPP developed customized software to model *Halo's* predicted movement. The predictions were recalibrated to real wind conditions in a fully assembled pre-commissioning process at the Innovation Composites boat building yard in Nowra.

Structural Engineering and Finite Element Analysis: The structural engineering provides a stiff and stable structure that can be freely activated by the wind. The design combines carbon fibre, a super lightweight super strong material, joined by finely machined steel connections. Detailed modelling by computer finite element analysis (FEA) enabled the smallest and lightest steel connections to be designed and optimal layup of the carbon fibres achieved.

Main image: *Dr Graeme Wood, CPP Wind Engineers, St Peters, 2011*
Bottom left image: *Finite element analysis, steel construction*
Bottom right image: *Developing the wind function of the arm, CPP Wind Engineers, St Peters, 2010*
Photos by Ian Hobbs Media

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DESIGN DEVELOPMENT

Full scale colour and light testing

The artists undertook extensive research and testing with specialist colour consultant Martin Bruveris to achieve the glistening depth of *Halo's* reflective pearlised surface. Colour and lighting options on full-size sections of *Halo's* mast, ring and arm were then explored in depth during day and night testing at Carriageworks in Redfern.

Main image: *Full scale colour and lighting tests, Carriageworks, Redfern, December 2011*

Support images, left to right:

- *Full scale colour tests, Carriageworks, Redfern, December 2011, Konrad Hartmann*
- *Fullscale lighting tests, Carriageworks, Redfern, December 2011*
- *Jennifer Turpin and Michaelie Crawford, Turpin + Crawford Studio, Chippendale*
- *Martin Bruveris and Michaelie Crawford, Turpin + Crawford Studio, February 2011*

Photos by Ian Hobbs Media

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DESIGN DEVELOPMENT

Mechanical design

Mechanical Engineering and testing: Partridge Event mechanical engineer Arran Gordon's design delivers an almost frictionless motion. The innovative bearing design employs a small ceramic ball the size of a 10mm marble that allows even gentle winds to activate *Halo's* turning and tilting motion. The control arrangement and elastomeric "bump stops" that gradually absorb and dampen *Halo* only come into play at higher revolutions and degrees of pitch.

Cyclic load testing of *Halo's* bearing system was carried out at SPFX Australia in Homebush. The tests confirmed that even under extreme loading and maximum movement, the bearings performed perfectly, ensuring low future maintenance and no risk to the public.

Destruction testing was unable to destroy the small ceramic ball bearing. The 40 tonne press employed pushed the ceramic ball into a tough steel test block leaving an indent rather than crushing the ball itself.

Main image: *The ceramic bearing on which Halo pivots, February 2012*

Bottom left image: *Cyclic load test of bearing, SPFX Australia, Homebush Bay, February 2012*

Bottom right image: *Arran Gordon discussing mechanical design with Jennifer Turpin*

Photos by Ian Hobbs Media

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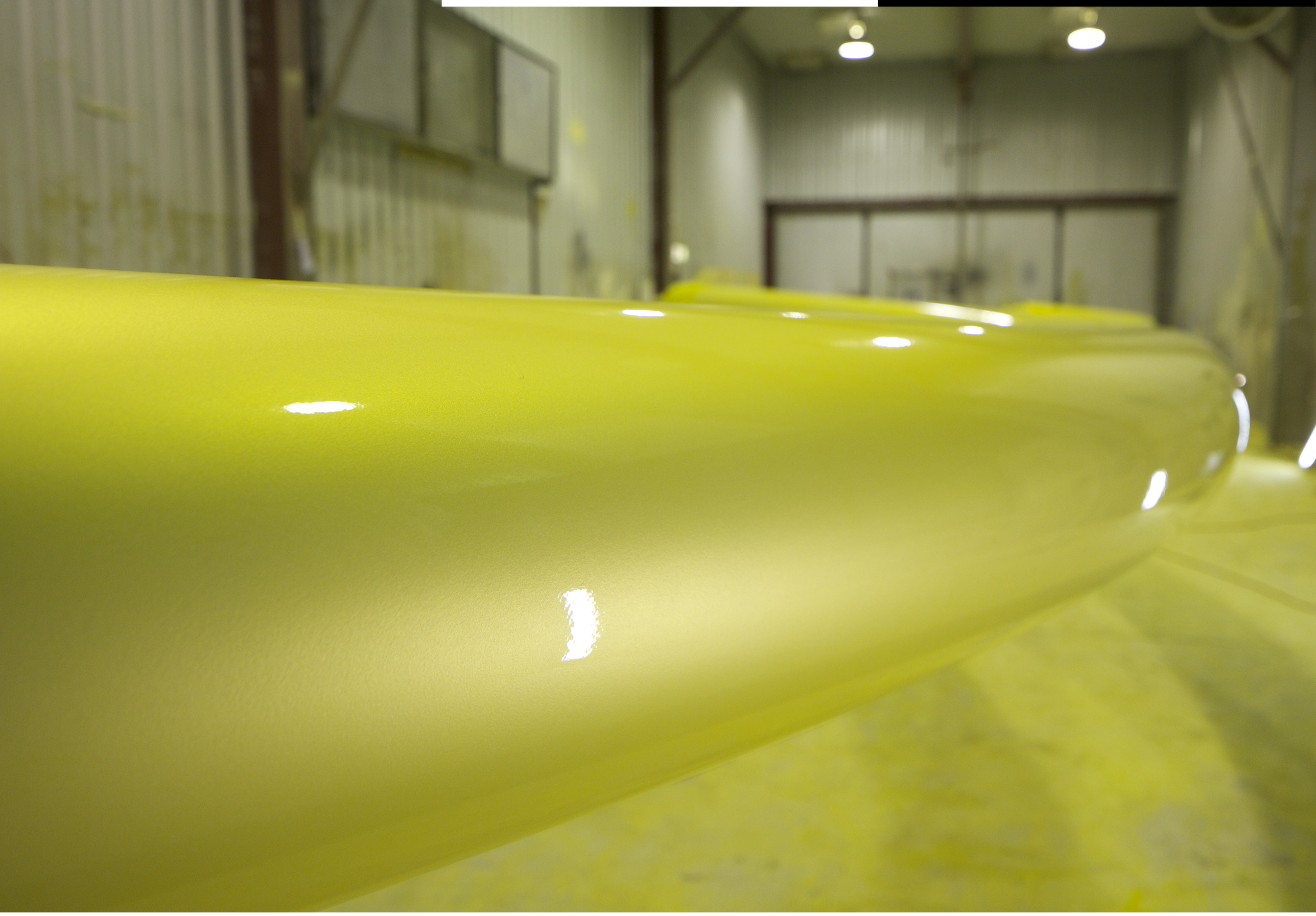

CONSTRUCTION

Fabrication

Halo's ring and arm were fabricated, painted and tested at head contractor Innovation Composites boat building yard in Nowra. The mould for the carbon fibre ring was produced by MouldCAM in Brisbane.

Main image: *Carbon fibre ring fabrication at Innovation Composites, Nowra, July 2012*

Support images, left to right:

- *Theo Katris spray painting, Innovation Composites, Nowra, July 2012*
- *Carbon fibre ring fabrication, Innovation Composites, Nowra, July 2012*
- *Carbon fibre ring and MDF mould, Innovations Composites, Nowra*

Photos by Ian Hobbs Media

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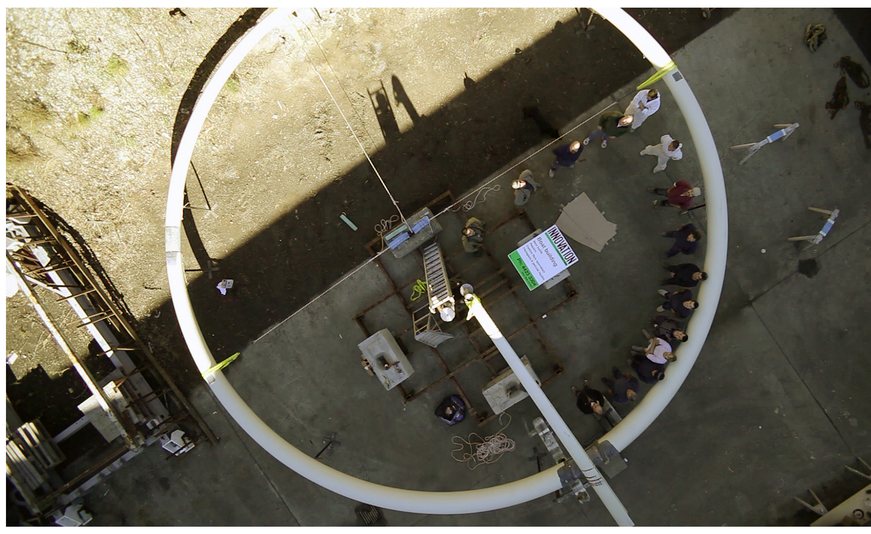

CONSTRUCTION

Full scale assembly and wind tests

Main image: *Adrian Van Antwerpen attaching arm to bearing assembly for full scale wind test, Innovations Composites, Nowra, June 2012*

Support images, left to right:

- *Halo mast is secured temporarily to full scale wind tests, Innovations Composites, Nowra, June 2012*
- *Adrian Van Antwerpen setting up the low level test and weight balancing, Innovations Composites, Nowra, June 2012*
- *Engineering and construction team, Innovations Composites, Nowra, June 2012*

Photos by Ian Hobbs Media

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SITE INSTALLATION

Mast

All images:
Mast being craned into position, July 2012
Photos by Ian Hobbs Media

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SITE INSTALLATION

Transport to site, craning and assembly of ring

Due to its sheer size, the *Halo* ring was transported to Central Park in 3 pieces.

Main image: *The Halo ring travelling from Nowra in 3 pieces, July 2012*

Support images, left to right:

- *The Halo ring arrives from Nowra in 3 pieces, July 2012*
- *Ring pieces being craned into position on site, July 2012*
- *Ring being assembled on site, Chippendale*

Photos by Ian Hobbs Media

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SITE INSTALLATION

Assembly

Main image: *Brett Laker connecting the Halo arm to the bearing assembly, July 2012*

Support images, left to right:

- *Brett Laker greasing the bearing assembly, July 2012*
- *Theo Katris paints the joins within double layered air-conditioned tents to facilitate dust-free joining and painting, July 2012*
- *Adrian Van Antwerpen adds lead for balance, July 2012*

Photos by Ian Hobbs Media

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SITE INSTALLATION

Assembly

Main image: *Halo being lifted onto its mast, July 2012*
Bottom left image: *Halo is lifted, July 2012*
Bottom right image: *The artists looking on as Halo is lifted, July 2012*
Photos by Ian Hobbs Media

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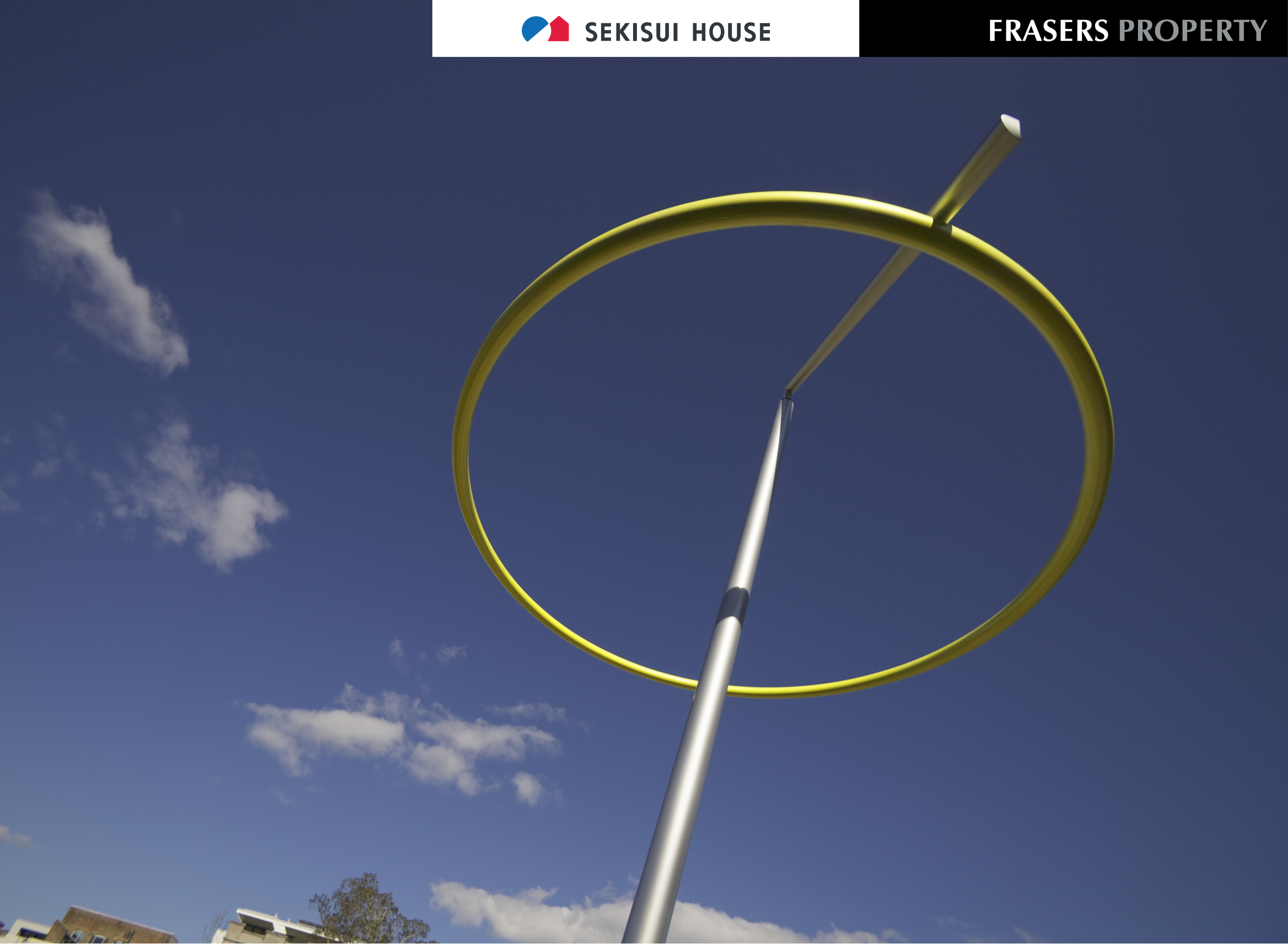

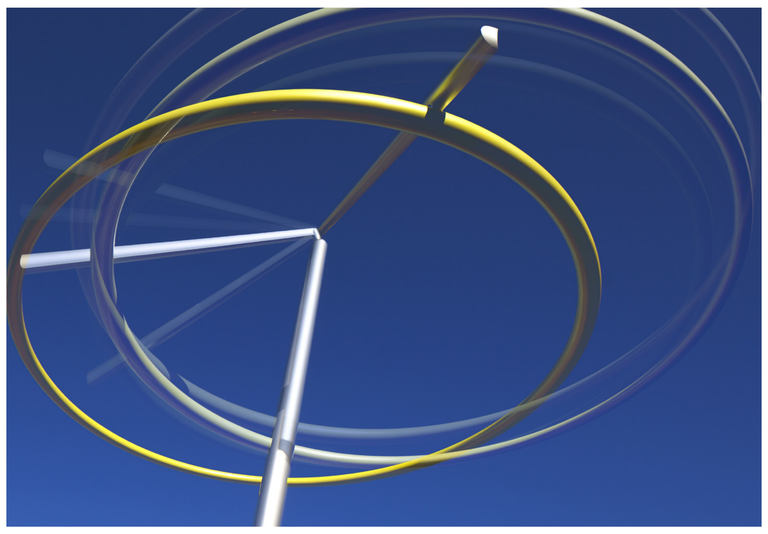

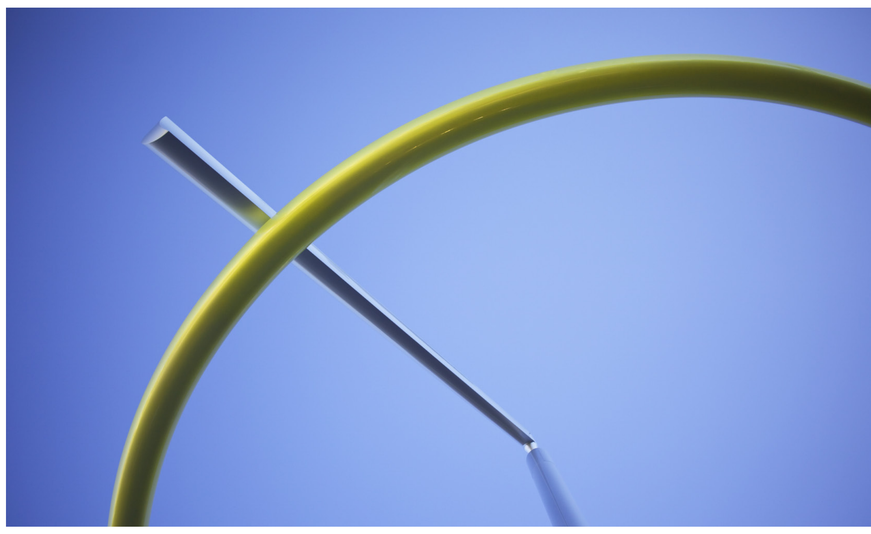

HALO

HALO is airborne

As much an invention as an artwork, *Halo* is a dynamic marriage between art, environment, science and engineering.

Photos by Ian Hobbs Media

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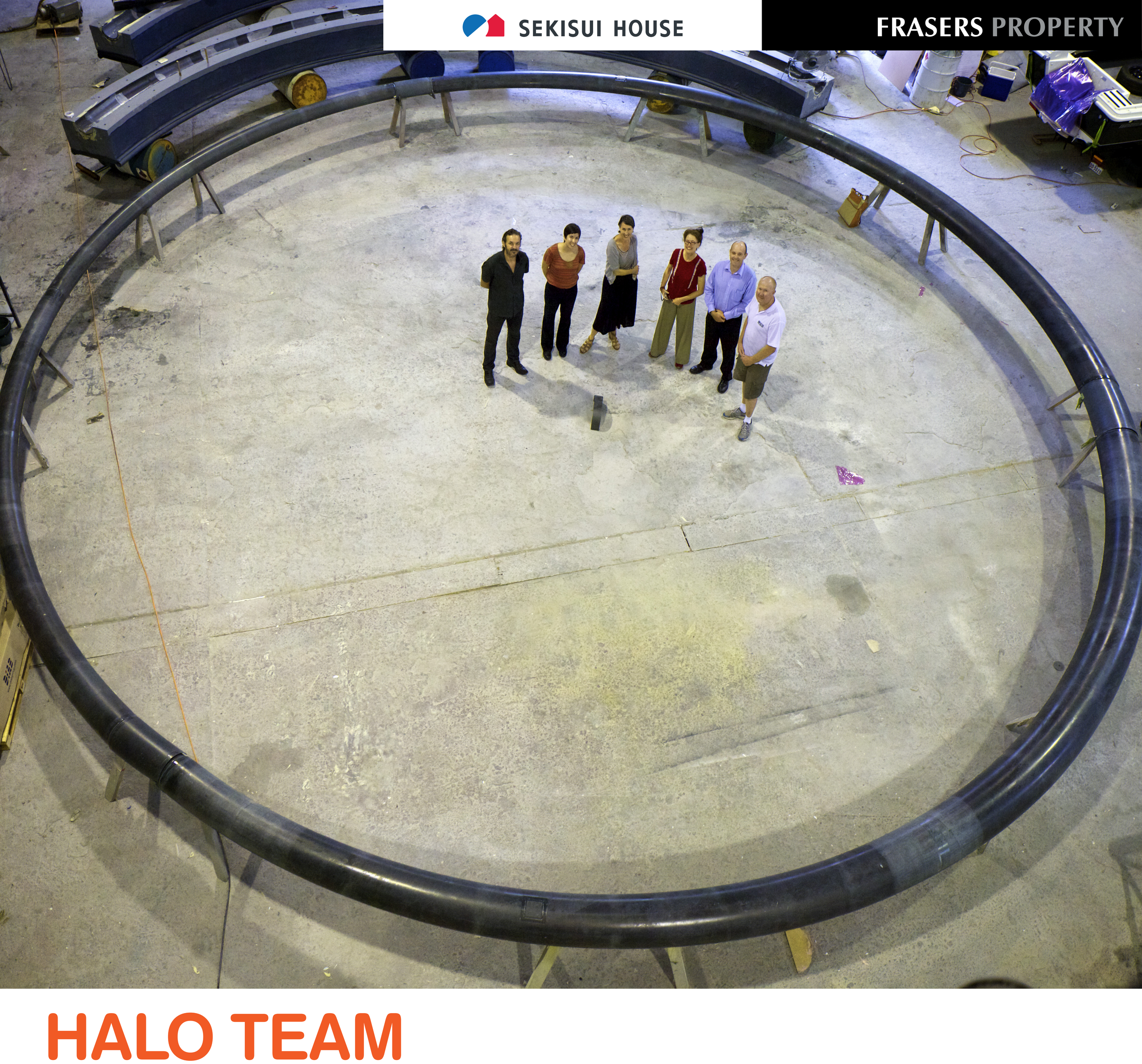

HALO TEAM

Acknowledgements

Halo was realised through the close collaboration of the artists working with a team of specialist engineers, designers and fabricators under the direction of Jeremy Sparks, a director of Partridge Event.

Partridge Event was responsible for wind, structural and mechanical engineering, the project management, fabrication, installation, commissioning and certification.

***Halo* Team**

Artists: Turpin+Crawford Studio, Jennifer Turpin and Michaelie Crawford

Delivery: Partridge Event

- Partridge Director and Project Manager – Jeremy Sparks
- Partridge Industrial Design and CAD Model Contractor, Konrad Hartmann
- Partridge Structural Engineers, Harry Partridge, Morgan Sheehy, Kirsten Lewis
- Partridge Mechanical Engineer, Arran Gordon
- Partridge Project Coordinator, Reinaldo Tucki
- Wind Engineering, CPP Wind Engineering, Dr Graeme Wood and Peter Bourke
- Carbon Engineering, SP-High Modulus Gurit, Valerio Corniani, Thomas Basset
- Lighting Engineering, Vision Design, Donn Salisbury and Ryan Shamier
- Colour and Paint Consultant Contractor, Martin Bruveris
- Mechanical, Structural and Destructive Testing, SPFX Australia, Rodney Bourke
- Head Contractor, Innovation Composites, Mark Rowed
- Mould, MouldCAM, Toby Whitfield
- Structural Steel Contractors, BML Steel, Brett Laker Q.A.Engineering, Geoff Fountain
- Paint Contractor, Masada Paint and Panel, Theo Katris
- Carbon Fibre, Mechanical, Structural Engineering & Tender Peer Reviews: Trisdek, Matrix, Dovell Naval Architects

Photography and Videography: Ian Hobbs Media

Jennifer Turpin and Michaelie Crawford

Artists Jennifer Turpin and Michaelie Crawford work collaboratively to produce award winning permanent and temporary artworks for the public domain. Their sculptural installations are a poetic and dynamic response to the specificity of the sites they inhabit. Working with nature's elemental energies, their kinetic installations engage water, wind and light as sculptural media to create rhythmic, responsive and transformative 'performances' in the everyday life of the city

Partridge Event

For three decades Partridge Event has worked with leading Australian and international artists, designers and architects to design and engineer creative, bold and innovative structures. Through the targeted application of their extensive engineering and project management skills they have brought thousands of imaginative concepts to reality.

Commissioners

Frasers Property, Sekisui House and the **City of Sydney**

Halo was commissioned by the developers of Central Park, Frasers Property Australia and Sekisui House Australia, in collaboration with the City of Sydney. Both Frasers Property and Sekisui House are global companies committed to the development of sustainable communities and intelligent cultural placemaking – as is clearly evident at Central Park. *Halo* has been donated to the City of Sydney as part of its City Art Collection.

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CENTRAL PARK ART

$8 million public art collection

High calibre public art is intrinsic to the creative character of Central Park's environment and its engagement with the broader community. It is a core component of Central Park's vision for a world-class urban village that celebrates leading talents in the arts, architecture, design and technology. Frasers Property Australia and Sekisui House Australia's public art program seeks to deliver enduring value through the commissioning of permanent and temporary site-specific works by leading Australian and international artists, as well as such innovative programs as FrasersStudios visual and performing artists residencies.

Halo joins the highly regarded Artists In Residence temporary art project curated by Turpin+Crawford Studio and renowned curator Anne Loxley. Nominated for the prestigious 'Alice Awards', Artists In Residence comprises site-specific artworks by Brook Andrew, Mikala Dwyer and Caroline Rothwell on the Irving Street Brewery building.

Ambitious, architecturally integrated works by celebrated French artists Patrick Blanc and Yann Kersale will envelope and illuminate One Central Park with vast vegetal walls and a dramatically cantilevered animated LED heliostat. At ground level, Danish landscape architect Jeppe Aagaard Andersen and Turf Design Studio have created a shimmering water axis for Chippendale Green. Together with *Halo*, these environmentally responsive art and design installations harness and celebrate the natural energies of wind, water, light and growth.

Turpin+Crawford Studio's Public Art Strategy for Central Park highlights a unique social and industrial history, past and future alchemical transformations, and an embedded sustainability. It is thematically underpinned by the changing engagement with liquids and energies over the site's history and future development. The strategy weaves together multiple threads, such as the ongoing influence of the original Blackwattle Creek and it's now buried convict stormwater drain, to propose a multifaceted understanding of place for the development of future artistic response.

The strategy envisions the current construction period as a dynamic transformation from the old brewery as a closed 'city within a city' to an increasingly open, sustainable and inter-connected precinct. As the high walls and hoardings gradually come down, they will open to innovative contemporary architecture and design and the progressive installation of engaging temporary and permanent site-responsive artworks.

Main image: *Lighting artwork by Yann Kersalé, affixed to One Central Park's monumental cantilever*

Supporting images, left to right:

- *Chris Fox at FraserStudios*
- *Slingshots at FraserStudios*
- *'Local Memory' by Brook Andrews, part of Artists in Residence*

Photos by Arunas Klupsas

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