



 Robert **Bird** Group  
an  company

**NDY**  
A TETRA TECH COMPANY

# PLACES FOR GREATNESS

**BRISBANE 2032  
CAPABILITY STATEMENT**

When the world watches The Australian Open Grand Slam, the AFL Grand Final, the Olympics and Commonwealth Games or Test match cricket around Australia, they experience stadiums with our structural and building services' design at their core.

## ROBERT BIRD GROUP & NDY

We bring together 2 of the largest and most experienced engineering consultancies in Queensland to deliver structural and building services' design for the Brisbane Olympics.

Both Robert Bird Group (RBG) and NDY are global engineering firms, each with 12 offices and over 500 employees. Part of the Brisbane fabric, we've both had offices here for over 40 years.

Our Brisbane-based teams have delivered major sporting venues in Queensland including The Gabba, Suncorp Stadium and Queensland Sports and Athletics Centre (QSAC) through to Barcelona's iconic Camp Nou Stadium.







## BEST-FOR-PROJECT OUTCOMES

RBG and NDY are discipline specialists who maintain our independent critical thinking. We focus on best-for-project outcomes rather than settling for internal compromises.



## LOCAL TEAMS WITH GLOBAL EXPERTISE

Our strong local teams are led by Register Professional Engineers of Queensland (RPEQ Engineers) and have an in-depth knowledge of Queensland's regulations and ways of working. These are the specialists you'll see day-to-day.

Our local teams are supported by global colleagues experienced in delivering world-class stadiums and venues in Europe and Asia.

With over 46,000 staff across our parent companies – Surbana Jurong and Tetra Tech – we also have the capacity to scale, deliver and leverage international best practice.



## EFFECTIVE COLLABORATION ON MAJOR VENUES

RBG and NDY have over 30 years of collaboration on some of the largest and most complex landmark projects in Brisbane and Australia:

- The Gabba Stadium
- Rod Laver Arena Redevelopment
- Sydney Metro's Crows Nest Station
- 275 George St, Brisbane
- 1 Macquarie St, Brisbane
- RAAF Oakey, Queensland
- Australia 108, Melbourne
- The Emporium, Melbourne.

We understand the pressures of delivering projects that are under close public scrutiny and have demanding program timelines and cost restraints. In Brisbane, we've been there and done that.



## FOCUS ON CONSTRUCTABILITY FROM DAY ONE

We work together from the very beginning of the design process to ensure all stakeholders understand the build method and lock in procurement. By ensuring our venue design considers the construction sequence from day one, we can avoid costly redesigns and cost fluctuations in materials.



## SENIOR REPRESENTATION AT EVERY MEETING

As part of our multidisciplinary integration, we include decision makers from both structural and services in every meeting. This facilitates immediate, informed decision making across teams.



## JOINED-UP DESIGN

Our structural and services' teams develop design concepts collaboratively. This ensures we focus on feasibility across all key disciplines, most especially those where the structure is penetrated.



## SUSTAINABLE APPROACH

From coordinated prefabrication across structures and services to lifecycle analysis of venues, we consider net zero in every design decision. We use digital tools to measure and assess our embodied carbon, from cradle to gate as well as impacts to construction processes.



## STAKEHOLDER ALIGNMENT

We understand how many stakeholder briefs, and expectations, you need to juggle. Our experience working with Queensland's local government organisations, sports venues, businesses and communities gives us a huge advantage in managing these conflicting priorities.



## DIGITAL COLLABORATION AND DESIGN OPTIMISATION

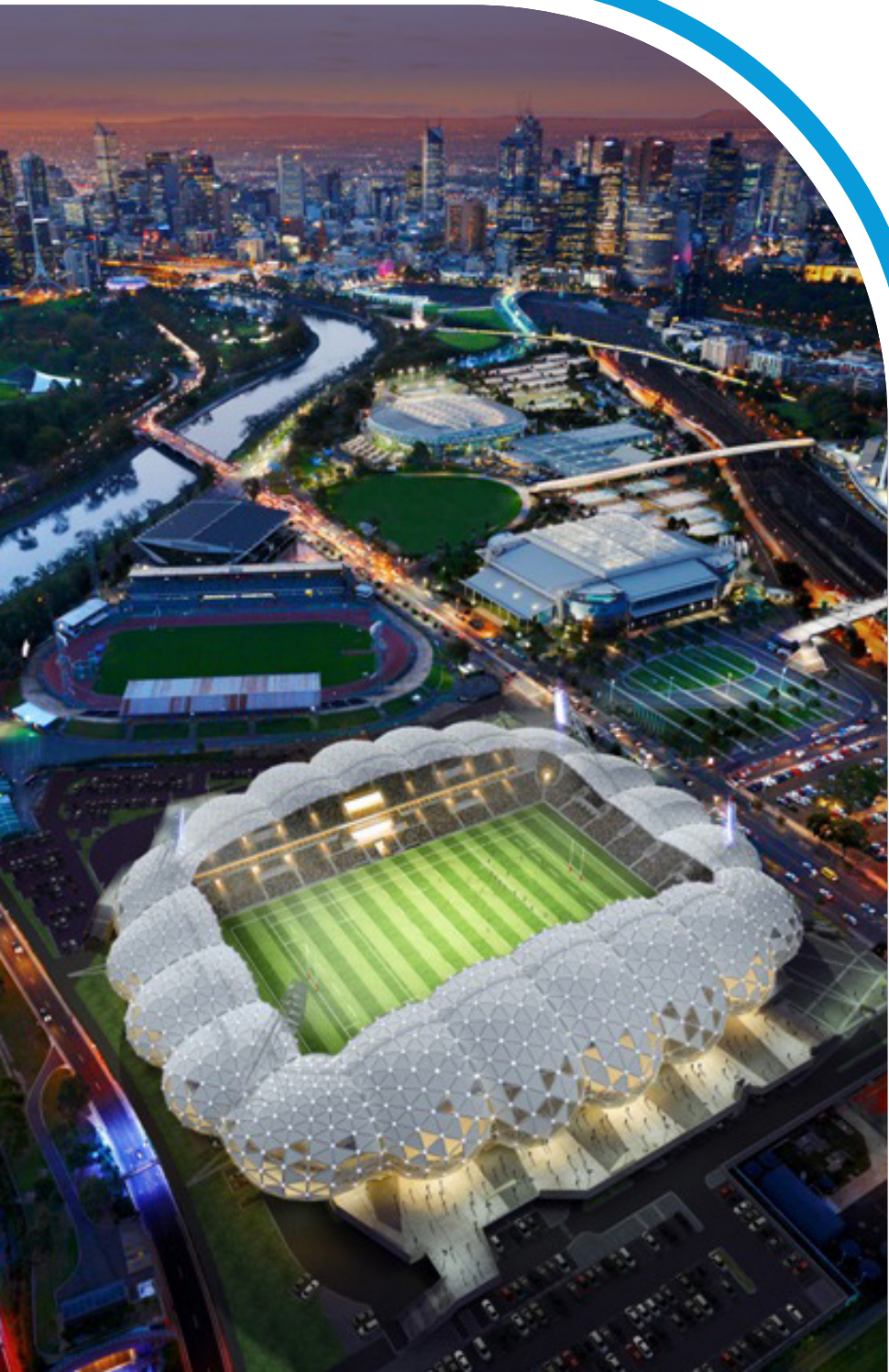
Our digital, parametric and analysis tools assess design concepts, advancing structural form-finding and design optimisation. Our immersive 4D Reveal virtual design and construction platform integrates construction methods, sequencing and services routes early in the design process. We have full BIM and Revit capability to deliver coordinated, data-rich models for accurate feasibility, design and construction.



## LEGACY AND ADAPTABILITY

Integration between disciplines enables effective, seamless transitions between a venue's different events. From temporary overlays to adaptable seating and customisable cooling and heating (like a badminton setting for sports with less sweat), we focus on venues that really do leave a lasting legacy





# HOW WE WORK

## OUR STRUCTURAL DESIGN CONSIDERS:

- structural framing to accommodate world's best-practice crowd dynamics and seismic and wind requirements
- structural optimisation through use of parametric, form-finding analysis and modelling tools
- facilitating architectural vision while keeping structural efficiency and sustainability considerations front of mind
- constructability of long-span roof structures to minimise temporary works
- construction sequencing to improve program and reduce risk
- structural robustness and long-term durability to minimise life-cycle maintenance and costs.

## OUR BUILDING SERVICES DESIGN CONSIDERS:

- people - a stadium needs to fulfil the needs of athletes, fans, officials, media, broadcasting, operations and maintenance teams
- community benefit - a stadium or local facility needs to inspire, motivate, activate and regenerate
- flexibility and endurance - a venue needs to adapt to different sports, tournaments, live entertainment, conferences and events
- a holistic experience - a facility, stadium or precinct needs to offer restaurants, bars, retail, function rooms, accommodation and solid transport infrastructure
- commercial viability - opportunities need to be maximised, from retail and function rooms that operate year round to a hotel on-site.





# OLYMPIC KNOW-HOW

## NDY

We have a deep understanding of the demands of Olympic venues, shown through our contributions to the 2000 Olympics events hosted at the Gabba and the 2018 Gold Coast Commonwealth Games.

Our venue overlays for these events at the Gold Coast Sport and Leisure Centre, Coomera Indoor Sports Centre and Carrara Stadium demonstrates our local experience in developing outstanding facilities and venues for global events.

We were also the engineering team behind venues for the Sydney Olympics 2000 including Sydney International Aquatic Centre and Sydney Superdome (ACER Arena).

## RBG

In addition to working on every major stadium in Australia, RBG was responsible for the design of approximately 1,350 homes within the Athletes' Village for the 2012 London Olympics. The Village in Stratford accommodated over 17,000 athletes during the 2012 Summer Olympics and has now been transformed into a vibrant residential community with over 3,000 homes.

Initial structural options ranged from entirely precast solutions with load-bearing facade to the in-situ post-tensioned slab and non-load bearing precast facade which was ultimately adopted.



# GLOBAL EXPERTISE

## **Robert Bird Group, member of the Surbana Jurong Group**

Surbana Jurong Private Limited (SJ) is one of the largest Asia-based urban, industrial and infrastructure consulting firms. Leveraging technology and creativity, SJ provides one-stop consultancy solutions across the entire value chain of the urbanisation, industrialisation and infrastructure domains.

SJ has a rich 50-year heritage in the development of Singapore's urban, industrial and infrastructure landscape. The Group traces its roots to the Housing Development Board (HDB) and the Jurong Town Corporation (JTC), agencies synonymous with Singapore's early township and industrialisation efforts.

## **NDY, part of The Tetra Tech High Performance Buildings Group**

As part of the of the Tetra Tech High Performance Buildings Group, we have a large portfolio of completed projects. This includes the US\$2.6B SoFi Stadium (home to the Los Angeles Rams and Los Angeles Chargers), delivered by our colleagues at Glumac.

Our partnership with Glumac, and others, allows us access to best global expertise for your landmark projects.



SoFi Stadium



# RBG REVEAL

Reveal is fully interactive, data-rich and real time. It provides users with the ability to navigate, interrogate, control and interact with a model, from any angle, at any stage of construction.

We also use it to improve the coordination of complex engineering design solutions across the entire the project team.

Key features include:

- fully interactive environment
- full 4D sequenced BIM model
- model element properties interrogation
- image and video capture
- predefined camera locations
- custom viewpoint creation
- measurement tool
- section tool
- multiple camera models
- context aware model element highlights.







## WE REDUCE EMBODIED CARBON BY:



**SOURCING LOCAL MATERIALS AND COMPONENTS**



**USING LEAN DESIGN AND OPTIMISATION TECHNIQUES**



**APPLYING DIGITAL CARBON MEASUREMENT AND REPORTING**



**MINIMISING OR ELIMINATING TEMPORARY WORKS**



**ADOPTING DFMA OR COMPONENT-BASED DESIGN**



**REDUCING WASTE**



**SEEKING ALTERNATIVE MATERIALS**



**ADOPTING MODERN METHODS OF CONSTRUCTION.**

# SUSTAINABILITY

The 2032 Olympic and Paralympic Summer Games will be the first that are contractually obligated to be climate positive. This presents an unprecedented opportunity for Brisbane to define what that means and showcase it to a global audience.

The commitment aligns with Queensland's continuing sustainability journey and commitments, including achieving net zero emissions by 2050 and powering Queensland with 70% renewable energy by 2032.

## Going beyond net zero

A sustainability strategy that delivers on a climate positive outcome is critical. It needs to ensure all facilities achieve electrification, remove the use of fossil fuels and that energy efficiency - both passive and active - is a key focus through design and operations.

With the carbon dial shifting from operational to embodied carbon, as precincts are electrified and the grid decarbonises, strategies that focus on reducing embodied carbon through dematerialisation and material specifications will also be key.

Moving beyond carbon, the strategy must ensure precincts are resilient, designed with an integrative transport model and supportive of biodiversity. Embedding circular design principles into design and operations are also must-haves.

Every venue must be able to adapt to the changing needs and demands of the community beyond the Games as we consider the whole of life of facilities beyond 2032.

## Green Star Buildings

Brisbane 2032 is committed to targetting 6 star Green Star Buildings certification for all new and significantly upgraded venues. At NDY, we're working on several major projects across Australia to achieve 6 Star Green Star Buildings.

Our team has 4 members that form part of the Green Building Council of Australia's Expert Reference Panels that support the Green Building Council of Australia in the development of the Green Star tool as well as future updates to the entire suite of rating systems.

# A TEAM WHO UNDERSTANDS PEOPLE

**We're engineers, designers and consultants. We're also people.**

Bringing our human side to our work means that we think about how fans, athletes, visitors, performers, operations teams and staff interact with a place now and 50 years from now. This means that our team gets down into the detail, thinking about how each design decision will affect the people who move around these venues.

Do fans feel safe leaving the stadium at night? Can a wheelchair user move around comfortably? Are people connected to what's going on both on and off the pitch?

This approach may not sound ground breaking, but you'd be surprised by how many others don't start with the people. Know that we do.

## YOUR KEY CONTACTS



**GREG GARRAD**  
CIVIC AND SPORTS LEAD, QLD  
T +61 7 3120 6843  
E G.GARRAD@NDY.COM



**JAMIE HAYES**  
OFFICE DIRECTOR, QLD  
T +61 410 891 171  
E J.HAYES@NDY.COM



**NICK BARKER**  
GLOBAL MANAGER INFRASTRUCTURE  
& CONSTRUCTION  
T +61 7 3319 2777  
E NICK.BARKER@ROBERTBIRD.COM.AU



**GREG WEIR**  
MANAGING DIRECTOR - BUILDINGS  
T +61 7 3319 2777  
E GRANT.WEIR@ROBERTBIRD.COM



**ANDREW GENTNER**  
DIRECTOR, QLD  
T +61 412 251444  
E A.GENTNER@NDY.COM



**ASHLEY MERRETT**  
DIRECTOR, QLD  
T +61 458 735 356  
E A.MERRETT@NDY.COM



**BEN RINGROSE**  
DIRECTOR - MAJOR PROJECTS - ANZ  
T +61 460 333 353  
E BEN.RINGROSE@ROBERTBIRD.COM



**GREG HOGG**  
PRINCIPAL, STRUCTURES  
T +61 7 3319 2777  
E GREG.HOGG@ROBERTBIRD.COM.AU



**MATHEW DALGETY**  
ASSOCIATE DIRECTOR, QLD  
T +61 3 9862 6957  
E M.DALGETY@NDY.COM



**GEOFF WERRAN**  
TECHNICAL DIRECTOR  
T +971 4 455 6500  
E GEOFF.WERRAN@ROBERTBIRD.COM



**ZITO DE FARIA**  
SENIOR TECHNICAL DIRECTOR  
T +971 4 455 6500  
E ZITO.DEFARIA@ROBERTBIRD.COM.AU



**NICK COLE**  
DIRECTOR - STRUCTURES  
T +44 7710 710 831  
E NICK.COLE@ROBERTBIRD.COM



# OUR SHARED EXPERIENCE



**THE GABBA REFURBISHMENT**  
BRISBANE, QUEENSLAND



**SUNCORP STADIUM**  
BRISBANE, QUEENSLAND



**QSAC STADIUM REDEVELOPMENT**  
BRISBANE, QUEENSLAND



**OPTUS STADIUM**  
PERTH, WESTERN AUSTRALIA



**ROD LAVER ARENA REDEVELOPMENT**  
MELBOURNE, VICTORIA



**AAMI PARK**  
MELBOURNE, VICTORIA



**ADELAIDE OVAL REDEVELOPMENT**  
ADELAIDE, SOUTH AUSTRALIA



**SYDNEY FOOTBALL STADIUM**  
SYDNEY, NEW SOUTH WALES



# QUEENSLAND EXPERIENCE



**BALLYMORE EASTERN GRANDSTAND**  
BRISBANE, QUEENSLAND - BY ROBERT BIRD GROUP



**SUNCORP STADIUM**  
BRISBANE, QUEENSLAND - BY NDY



**GOLD COAST SPORTS & LEISURE CENTRE**  
GOLD COAST, QUEENSLAND - BY NDY



**QUEEN'S WHARF IRD**  
BRISBANE, QUEENSLAND - BY ROBERT BIRD GROUP



**COOMERA INDOOR SPORTS CENTRE**  
GOLD COAST, QUEENSLAND - BY NDY



**PEOPLE FIRST STADIUM (CARRARA STADIUM)**  
CARRERA, QUEENSLAND - BY NDY



**QPAC STAGE 7, NEW PERFORMING ARTS CENTRE**  
BRISBANE, QUEENSLAND - BY NDY



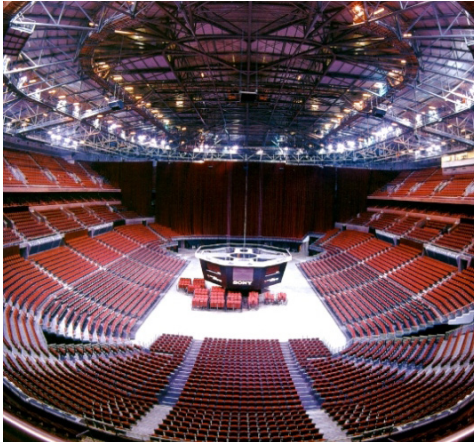
**BRISBANE CONVENTION & EXHIBITION CENTRE**  
BRISBANE, QUEENSLAND - BY NDY



# NATIONAL PROJECTS



**SYDNEY INTERNATIONAL AQUATIC CENTRE**  
SYDNEY, AUSTRALIA - BY NDY



**SYDNEY SUPERDOME**  
SYDNEY, AUSTRALIA - BY NDY



**COOPERS STADIUM REDEVELOPMENT**  
ADELAIDE, SOUTH AUSTRALIA - BY NDY



**MARVEL STADIUM REDEVELOPMENT**  
MELBOURNE, VIC, AUSTRALIA - BY NDY



**WESTERN SYDNEY STADIUM**  
SYDNEY, NEW SOUTH WALES - BY ROBERT BIRD GROUP



**COCKBURN ARC**  
PERTH, WESTERN AUSTRALIA - BY NDY



**AUSTRALIAN RUGBY DEVELOPMENT CENTRE**  
MOORE PARK, SYDNEY, NEW SOUTH WALES - BY NDY



**SYDNEY INTERNATIONAL CONVENTION CENTRE**  
SYDNEY, NEW SOUTH WALES - BY ROBERT BIRD GROUP



# GLOBAL PROJECTS



**1. CAMP NOU STADIUM**  
SPAIN - BY ROBERT BIRD GROUP



**2. KAI TAK SPORTS PRECINCT**  
HONG KONG PRC - BY ROBERT BIRD GROUP



**3. SOFI STADIUM**  
USA - BY TETRA TECH



**4. BAKU GYMNASICS ARENA**  
AZERBAIJAN - BY ROBERT BIRD GROUP



**5. PROVIDENCE PARK**  
USA - BY TETRA TECH



**6. LEVI'S STADIUM**  
USA - BY TETRA TECH



**7. BANC OF CALIFORNIA STADIUM**  
USA - BY TETRA TECH



**8. HAZZA BIN ZAYED STADIUM**  
UAE - BY TETRA TECH



# CONTACT US

## ROBERT BIRD GROUP

LEVEL 8  
470 ST PAULS TERRACE  
FORTITUDE VALLEY QLD 4006

[RBG website](#)



## NDY, A TETRA TECH COMPANY

LEVEL 13  
120 EDWARD STREET  
BRISBANE QLD 4000

[NDY website](#)



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