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Civil Infrastructure

Capability Statement

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5th Edition

bec.studio

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A large, cylindrical industrial tank is being transported on a flatbed trailer. The tank is secured with heavy chains and appears to be made of metal. The trailer has multiple axles with large, heavy-duty tires. The background is slightly blurred, suggesting a construction or industrial site.

“ We challenge mediocrity & strive towards client relationships & project team associations where a collective approach is championed in recognition of enhanced outcomes. ”

John Tuxworth

Managing Director

BEC



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Project: **Caloundra Central Park Precinct**
Location: **Caloundra**

Our Company

Built Environment Collective is an award winning Australian-based project management, design & contracting business, offering enhanced Client outcomes via integrated solutions & a holistic approach to design & construction.

Founded on the 20-year international experience of Managing Director, John Tuxworth, the company provides a unique value-adding contribution across a range of market sectors and project types.



Our People

BEC is comprised of diligent, passionate professionals, who utilise their expertise to facilitate optimal Client outcomes.

We maintain a rigorous approach to Continuing Professional Development (CPD). In addition of the commitment required by the relevant institutes and councils, CPD targets are mandated as part of each staff member's employment contract.

The Managing Director, John Tuxworth, contributes across all service offerings. John's tertiary education started at QUT's school of Civil Engineering. Following this John spent several years abroad working for Maunsell (Aecom) in Indonesia, Waterman Partnership in London, and Michael Punch and Partners in Dublin.

John's interest in becoming a multi-discipline building professional saw him undertake architectural studies at the University of Westminster in London, and he has also undertaken MBA studies through Latrobe University. John is also one of the few structural/civil specialists to be accredited as a Green Star Professional.



Project: **NSW National Disaster Relief and Recovery Arrangements Assistance (NDRRA)**
Location: **Central NSW**

Our Capabilities

Our Team of experienced professionals employ advanced analytical tools to drive highly functional & fit-for-purpose development.

We facilitate the delivery of buildings, structures, and civil works to meet a Client's detailed specifications and eliminate unnecessary costs, whilst still achieving compliance with Australian and international building codes. A strong focus on collaboration with other design and construction team members benefits our Clients by integrating a larger pool of ideas and experience.

Our contribution responds positively to the local environment with a focus on reduced maintenance and operating costs. We offer a multi-disciplined experience to assist with the reduction of materials and utilities requirements, and the maximisation of natural light and ventilation.

In addition, we offer experience with environmentally sustainable systems such as solar heating, rainwater harvesting and swales. Our innovative approach to buildability is based on construction techniques which lend themselves to safety and efficiency.

We work hard to ensure that Client objectives and outcomes are clearly defined from the outset. Our hands-on approach to project management assists to drive each project towards delivery, with an emphasis on quality, cost and program.

Project: **Julia Creek Aerodrome**
Location: **McKinlay Shire Council**



Our Expertise

We have significant experience in the design & documentation of developments both in Australia & abroad, across the company's core disciplines of structures, civil infrastructure, hydraulic services, & ESD.

Built Environment Collective's staff are recognised as professional engineers in Queensland, Victoria, and nationally via the National Professional Engineers Register of Australia. In addition to these domestic recognitions our company is also registered in Papua New Guinea.

Built Environment Collective is also a recognised Endorsed Consultant for Queensland Urban Utilities as a part of their new Certification Scheme for the delivery of water and waste water infrastructure.

Civil Infrastructure

- > Stormwater management
- > Engineering services
- > Subdivisions
- > Roads
- > Programme & Disaster Management
- > Flood Modelling
- > Traffic Impact Assessment Reporting
- > QUU Endorsed Consultancy

To accompany our Civil engineering competencies BEC also offers Hydraulic design services - providing a seamless infrastructure offering.

Hydraulic Services

- > Multi-storey & low rise
- > Luxury homes
- > Commercial, education, municipal
- > Water reuse strategies

The practice has been recently recognised and rewarded for its achievement at the Engineering Excellence Awards or Excellence in Concrete Awards in 2012, 2013, 2015, 2016 & 2017.

01

PROJECT: Julia Creek Aerodrome Pavement Rehabilitation & Lighting Upgrade
SIGNIFICANCE: Civil Infrastructure | Superintendency

Following a technical inspection in July 2017, Mackinlay Shire Council engaged BEC to design & document pavement rehabilitation & lighting upgrades for the Julia Creek Aerodrome in North West QLD.

The Aerodrome facilitates scheduled commercial flights by Rex Airlines, provides essential deliveries to the region, & accommodates transportation for 3,000 athletes, musicians and bull riders to the infamous annual Dirt'n Dust Festival.

Our design brief included runway, taxiway, and apron pavements, civil drainage and runway lighting. BEC was further engaged to offer comprehensive project management & superintendency services throughout construction.

The full 1.4km of stabilised pavement & sealed surface was completed within two weeks, through periods of monsoonal rain and extreme heat well above 40° degrees.



02

PROJECT:

Green Road Subdivision,
Park Ridge

SIGNIFICANCE:

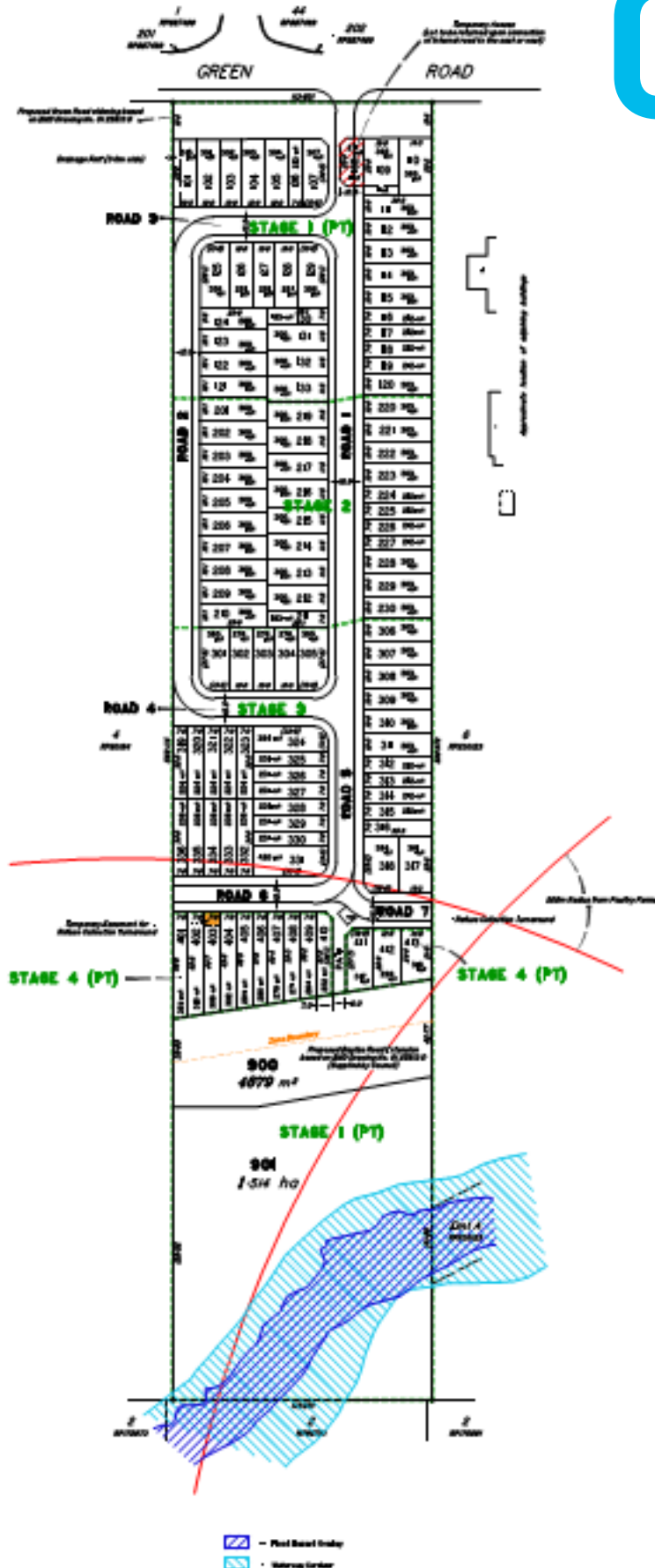
Civil Infrastructure |
Traffic Engineering

BEC undertook civil design for this new 112 residential subdivision development at Park Ridge in Queensland.

Development of the site was faced with a multitude of complexities and State/Federal Government Overlays restricting developed area, including:

- > Flood Hazard Overlay
- > Waterway Corridor Overlay
- > Odour impact from pre-existing neighbouring uses including poultry and flower farming
- > The requirement for temporary access/egress subject to neighbouring structure planning
- > Programme & Disaster Management
- > Flood Modelling
- > Traffic Impact Assessment Reporting

In addition to civil storm water, earthworks, erosion and sediment control, and road design BEC provided Traffic Engineering to meet the requirements of Logan City Council with respect to Development Approval.



03

PROJECT: United Petroleum, Windaroo
SIGNIFICANCE: Civil Infrastructure | Hydraulic Services

BEC was commissioned to provide civil infrastructure and hydraulic services for this new petrol station.

Civil works included road widening to Beenleigh-Beaudesert and Bannockburn Roads, redirection of road reserve drainage culverts, and pedestrian fencing in support of Operational Works Approvals. Control of stormwater quality and quantity has been achieved via bio-retention basins.

Hydraulic services design addressed fire, rainwater, and commercial tenancy requirements including trade waste.





04

PROJECT: NSW Council NDRRA Assistance

SIGNIFICANCE: Civil Infrastructure

NSW has been devastated by flooding and prolonged rain events in 2016, in what's widely considered the most damaging storm season the region has experienced in decades.

Shire Councils in the area have historically not achieved their preferred outcome with respect to the dollar value of their Natural Disaster Relief and Recovery Arrangements (NDRRA) funding Approvals. Many Councils are under immense pressure to repair their road and bridge networks quickly, with wheat and produce harvest deadlines looming.

BEC staff have significant long-term success in assisting 14 Councils to achieve optimal funding outcomes through NDRRA. Our John Tuxworth has additionally provided high-level consultancy support to the Queensland Reconstruction Authority(QRA) across a period of 3.5 years, and has significant and enhanced knowledge of the NDRRA Determination, Guidelines, Value-for-Money paradigm, eligibility, complementary & betterment opportunities, submissions, treatments, delivery & programme management, claims, acquittals, as well as Commonwealth auditing processes.

Our team are currently commissioned to support multiple councils in NSW with their: Data capture, Liaison with RMS, Submission preparation, Tendering, Contract Admin & Project Management, Works Management, and Acquittal.

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05

PROJECT: Newstead Brewery, Milton
SIGNIFICANCE: Civil | Structural

The Newstead Brewing Company is expanding their operations to the west side of Brisbane – to the sometimes fragrant home suburb of Queensland brewing – Milton. The new Castlemaine St (yes Castlemaine St) operations will complement the current brew house and bar restaurant in Newstead, with a 1,700m² brew house, bar and restaurant, function room, beer garden (our favourite kind of garden), and a street from terrace directly opposite Suncorp Stadium.

Our commission sees us engaging our high quality multi discipline team to offer both structural and civil services to a tricky commercial refurbishment. The existing 3,000m² GFA building is over 2 stories. The post-tensioned slabs and precast walls are supported by piles up to 18m long.

Reconfigured and increased hydraulic services demands to the change of use has necessitated new water and sewerage connections, with BEC performing the role of Queensland Urban Utilities Endorsed Consultant.

Construction started 15th August 2016. The BEC team will be in frequent attendance during the build and long past the first beer is pulled from the taps.

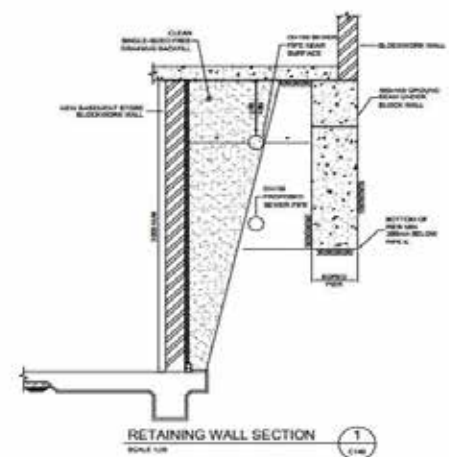
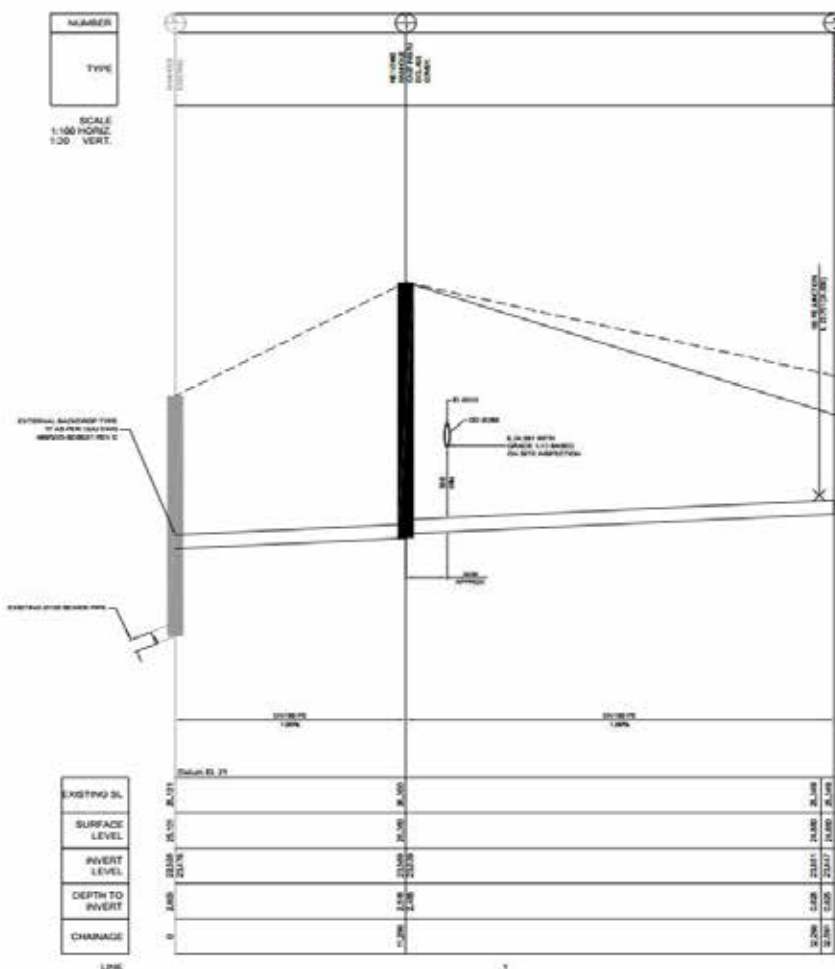
PROJECT: Gambaros Restaurant & Hotel
SIGNIFICANCE: Structures | Civil Infrastructure

BEC were commissioned to provide structural and civil consultancy services for alterations and additions to the Gambaro restaurant.

The project comprised additions to the existing restaurant in Phase 1, with Phase 2 including a new 5-storey hotel with 2 new floors above the existing restaurant.

BEC provided civil works design that included; pavement layout and details such as car parking on grade and vehicle crossings. Stormwater from building line and sewerage from property line. Stormwater management, sediment control, bulk earthworks and a new council sewer.

There were many complexities offered by the project, including the replacement of an existing combined sewer which served several adjacent heritage buildings. The site's tight constraints & neighbouring tenancy issues as well as the continued trading of the restaurant and minimal contingency.



LIFE SPAN TABLE				
AGE	DESCRIPTION	NO. BIRDS	NO. CL.	REMARKS
1	Immature to male 1st calendar phase	100-150	100	100, 100, 100, 100
2	Immature to male 2nd calendar phase	—	100	100, 100, 100, 100
3	Immature to male 3rd calendar phase	—	100	100, 100, 100, 100
4	Immature to male 4th calendar phase	—	100	100, 100, 100, 100
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9	Immature to male 9th calendar phase	—	100	100, 100, 100, 100
10	Immature to male 10th calendar phase	—	100	100, 100, 100, 100
11	Immature to male 11th calendar phase	—	100	100, 100, 100, 100
12	Immature to male 12th calendar phase	—	100	100, 100, 100, 100
13	Immature to male 13th calendar phase	—	100	100, 100, 100, 100
14	Immature to male 14th calendar phase	—	100	100, 100, 100, 100
15	Immature to male 15th calendar phase	—	100	100, 100, 100, 100
16	Immature to male 16th calendar phase	—	100	100, 100, 100, 100
17	Immature to male 17th calendar phase	—	100	100, 100, 100, 100
18	Immature to male 18th calendar phase	—	100	100, 100, 100, 100
19	Immature to male 19th calendar phase	—	100	100, 100, 100, 100
20	Immature to male 20th calendar phase	—	100	100, 100, 100, 100
21	Immature to male 21st calendar phase	—	100	100, 100, 100, 100
22	Immature to male 22nd calendar phase	—	100	100, 100, 100, 100
23	Immature to male 23rd calendar phase	—	100	100, 100, 100, 100
24	Immature to male 24th calendar phase	—	100	100, 100, 100, 100
25	Immature to male 25th calendar phase	—	100	100, 100, 100, 100
26	Immature to male 26th calendar phase	—	100	100, 100, 100, 100
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28	Immature to male 28th calendar phase	—	100	100, 100, 100, 100
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31	Immature to male 31st calendar phase	—	100	100, 100, 100, 100
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34	Immature to male 34th calendar phase	—	100	100, 100, 100, 100
35	Immature to male 35th calendar phase	—	100	100, 100, 100, 100
36	Immature to male 36th calendar phase	—	100	100, 100, 100, 100
37	Immature to male 37th calendar phase	—	100	100, 100, 100, 100
38	Immature to male 38th calendar phase	—	100	100, 100, 100, 100
39	Immature to male 39th calendar phase	—	100	100, 100, 100, 100
40	Immature to male 40th calendar phase	—	100	100, 100, 100, 100
41	Immature to male 41st calendar phase	—	100	100, 100, 100, 100
42	Immature to male 42nd calendar phase	—	100	100, 100, 100, 100
43	Immature to male 43rd calendar phase	—	100	100, 100, 100, 100
44	Immature to male 44th calendar phase	—	100	100, 100, 100, 100
45	Immature to male 45th calendar phase	—	100	100, 100, 100, 100
46	Immature to male 46th calendar phase	—	100	100, 100, 100, 100
47	Immature to male 47th calendar phase	—	100	100, 100, 100, 100
48	Immature to male 48th calendar phase	—	100	100, 100, 100, 100
49	Immature to male 49th calendar phase	—	100	100, 100, 100, 100
50	Immature to male 50th calendar phase	—	100	100, 100, 100, 100
51	Immature to male 51st calendar phase	—	100	100, 100, 100, 100
52	Immature to male 52nd calendar phase	—	100	100, 100, 100, 100
53	Immature to male 53rd calendar phase	—	100	100, 100, 100, 100
54	Immature to male 54th calendar phase	—	100	100, 100, 100, 100
55	Immature to male 55th calendar phase	—	100	100, 100, 100, 100
56	Immature to male 56th calendar phase	—	100	100, 100, 100, 100
57	Immature to male 57th calendar phase	—	100	

07

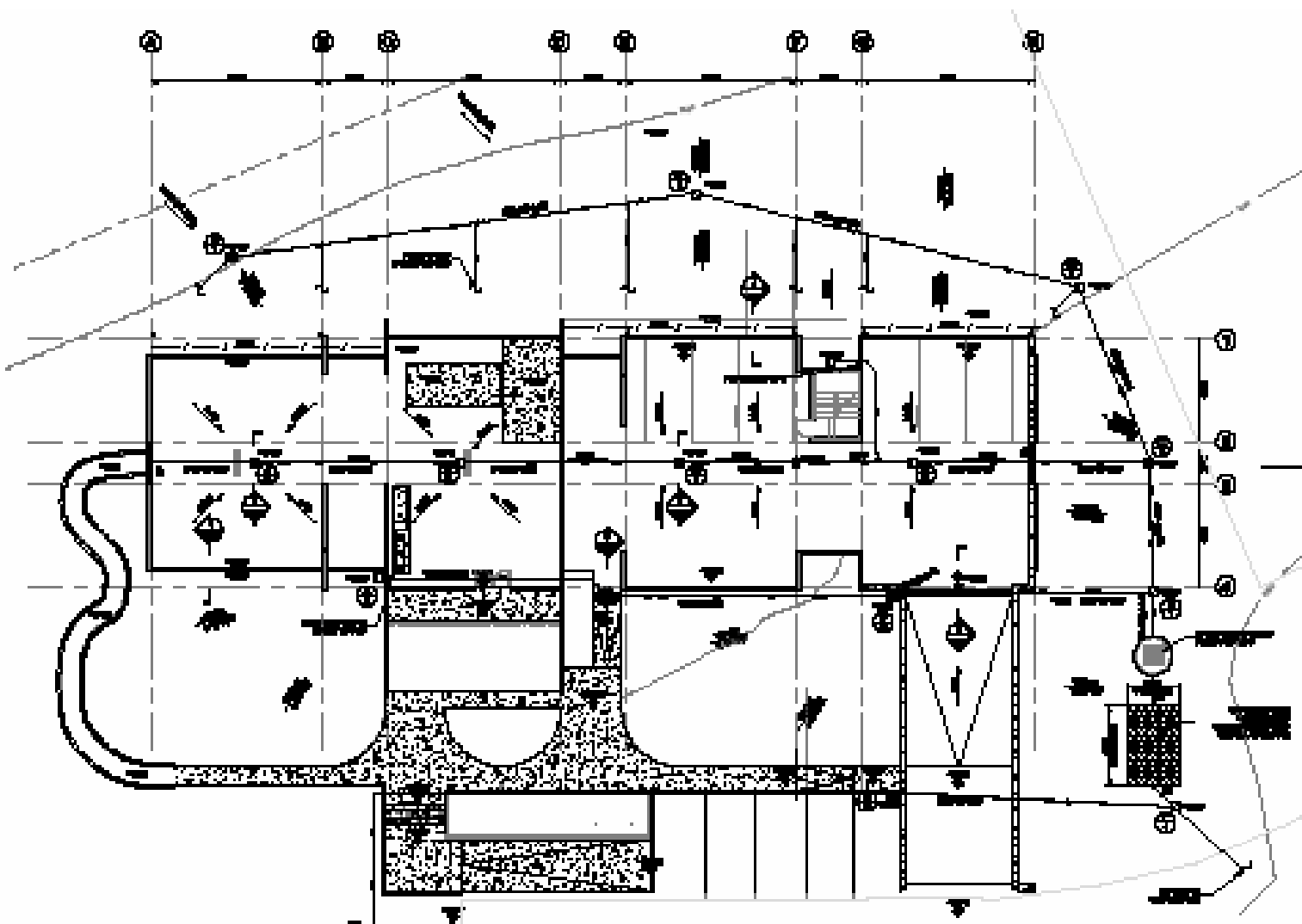
PROJECT: University of Queensland Clinical School, Bundaberg
SIGNIFICANCE: Structures | Civil Infrastructure | Hydraulic

BEC was commissioned to provide structural, civil and hydraulic consulting services for the new UQ Rural Clinical School at Bundaberg.

The facility will be utilised by both the University of Queensland and the hospital for training new health professionals.

The building sits elevated above the modelled Q100 flood level, with car parking and building services located in the full-height undercroft. Building structure is comprised of a suspended reinforced concrete floor and load-bearing tilt-up wall elements.

Whilst not a formal project requirement of the Council, the civil design incorporates in-ground rainwater detention following recommended best practice. Hot water is supplied from combined instantaneous and solar thermal systems. Reclaimed water has been adopted for toilet flushing.





08

PROJECT: Restoration of Essential Public Assets
National Disaster Relief & Recovery
Arrangements

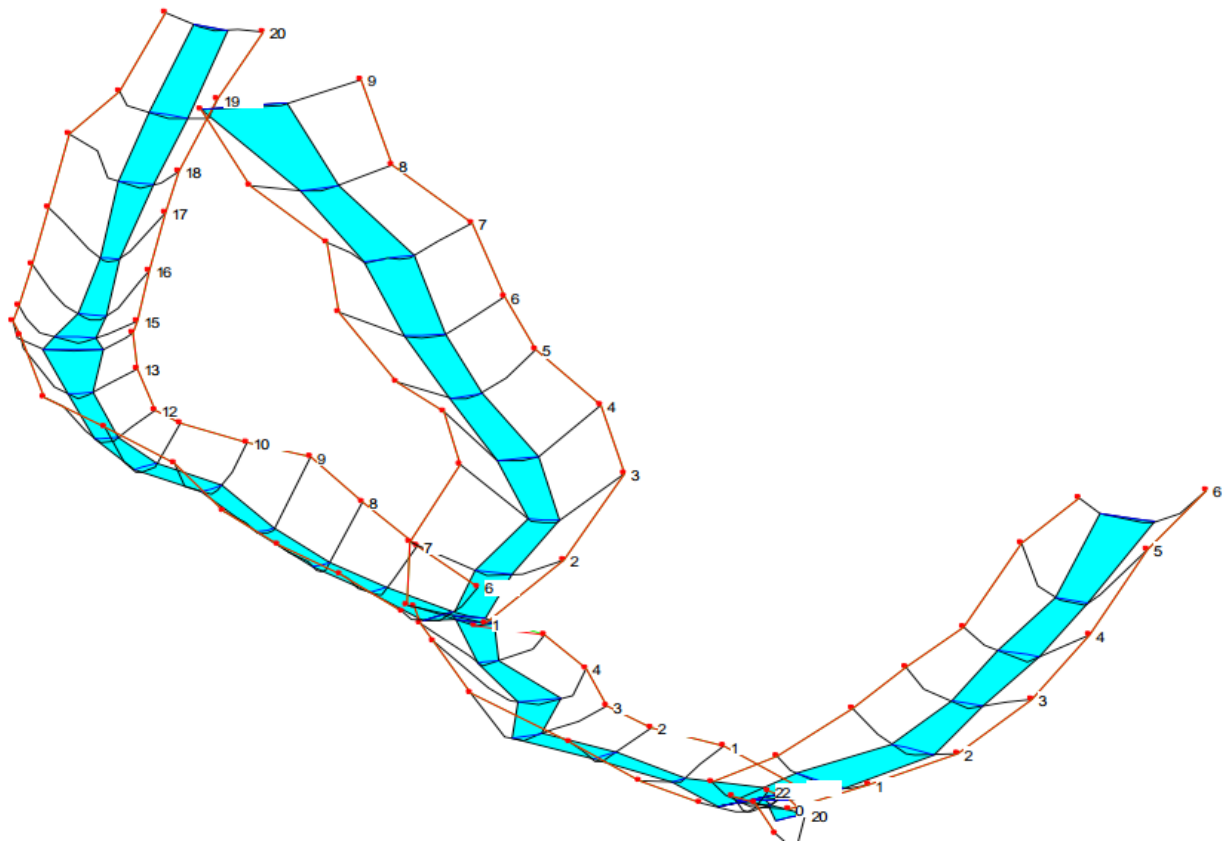
SIGNIFICANCE: Civil Project Management

BEC has provided a range of specialist Project Management and support services to the Queensland Reconstruction Authority (QRA) across several years, assisting with the multi-billion dollar restoration of civil infrastructure assets damaged due to disaster events since Cyclones Tasha and Anthony in 2010/11.

BEC Managing Director, John Tuxworth, initially undertook Program Management for Value-for-Money assessment of National Disaster Relief and Recovery Arrangements claims.

Our contribution has subsequently been extended to include:

- > Program Management for **\$200 million** grant funded reconstruction in Western Queensland
- > Foundation of VfM assessment frame-work for the \$80 million 2013 joint State and Federal Government Betterment fund
- > Establishment of a task-focused DTMR assessment team in 2013
- > Representation at District Disaster (and Local Disaster) Management Groups for Cyclone Marcia in 2015.



09

PROJECT:

Kanumbra Street

SIGNIFICANCE:

Flood Modelling

BEC were commissioned to model overland flow paths and to confirm minimum habitable floor level with reference to the guidelines for proposed alterations and additions to an existing residence in Coorparoo.

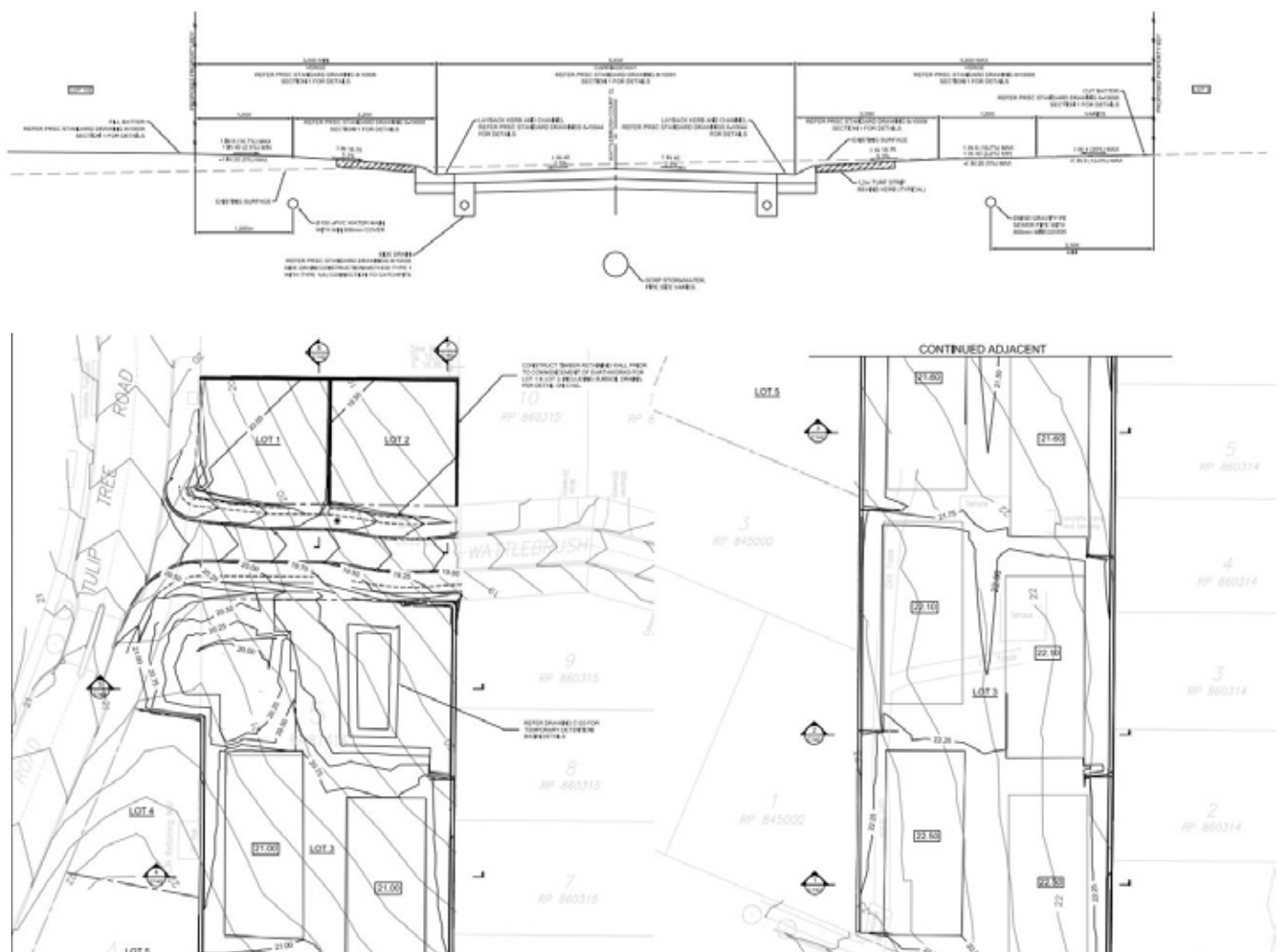
The site is located within a Brisbane City Council (BCC) nominated overland flow path. BCC's subdivision & Development Guidelines (now superseded by the Brisbane City Plan 2014) required an overland flow and flood study in order to satisfy nominated flood immunity requirements.

Flood modelling was required to demonstrate flood immunity of the site. BEC undertook 3-dimensional modelling of the overland flow upstream and downstream of the site to obtain flow characteristics. BCC contour maps were referenced to assist modelling the upstream and downstream catchments as a full catchment was approximately 600m with a total area around 15-hectares. The 3-D modelling and analysis allowed us to obtain site-relevant levels. Results were also validated utilising first principle calculations. Our detailed calculations and reporting supported Development Approval.

BEC was commissioned to provide structural, civil and hydraulic services for this townhouse development in Murrumba Downs. The project was comprised of three development stages. The first was a boundary realignment, the second included the subdivision of the site into 3 lots. In addition to a new road reserve which will extend an existing roadway through the site. The final stage involved the further subdivision of the site to make a total of 5 lots.

In order to obtain DA approval from council BEC designed and documented the necessary engineering services to provide infrastructure to all lots. Additionally, a stormwater management report was prepared to demonstrate that post development flows will not adversely impact neighbouring properties.

Operational works documentation included; Cut & fill plans, allotment retaining, erosion and sediment control plans and roadway, pavement and crossover design.



11

PROJECT: Verde

SIGNIFICANCE: Civil Infrastructure | Engineering Services |
Traffic Assessment | Stormwater Management

BEC was appointed to provide Site-Based Stormwater Management Plan, Engineering Services Report, as well as Traffic Assessment Reporting for the Development Application by VCP Developments to construct a multi-unit high rise with 86 apartments in West End.

The project encompassed multiple civil engineering disciplines and presented various challenges including the facilitation of adequate active transport storage space in compliance with the new BCC City Plan 2014. BEC identified and documented several engineering options to provide the client with post-planning flexibility.

Of note is a hydraulic design solution to re-use grey water as irrigation for green walls on the building's exterior.



Our Values

We challenge mediocrity & strive towards client relationships & project team associations where a collective approach is championed in recognition of enhanced outcomes.

We are acutely aware of the adverse impact that current development paradigms have on the Triple Bottom Line sustainability.

We believe in professionals adopting a multi-disciplinary perspective in delivering projects.

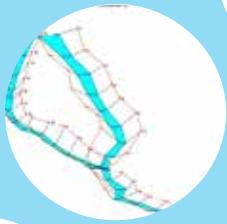
Our Vision

To be the first choice of clients who value quality, & to be recognised as adding-value [as opposed to being just another commodity service] - by providing creative solutions based on diversified skill and experience.

To lead positive triple-bottom-line change in the construction industry.

To found our business success on a passionate approach towards Continual Professional Development targets in excess of the commitment required by the relevant institutes and councils.

<BEC>



Melbourne | Sydney | Brisbane | Gold Coast | Cairns | Perth | Port Moresby

