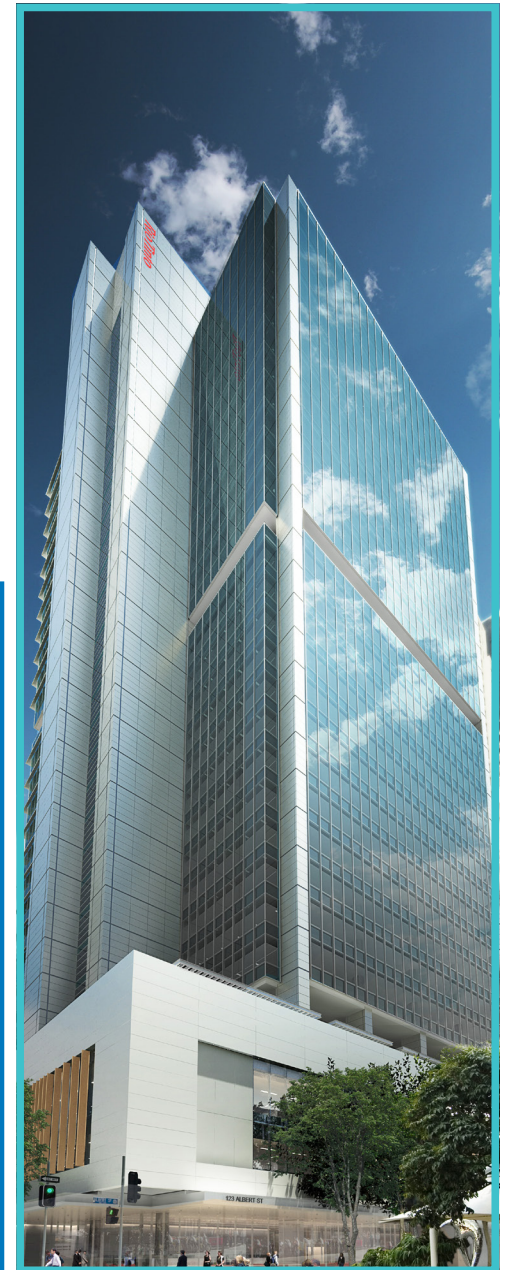




AQUALOGICAL

Plumbing Design Solutions



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CAPABILITY STATEMENT

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Aqualogical is an award winning, boutique engineering consultancy specialising in the design of Hydraulic (Plumbing) and Fire Services to the building industry. We are a privately owned company formed in 2006, based in Underwood, Queensland in easy reach of Brisbane, Gold Coast and Ipswich. Aqualogical undertakes consultancy work in Australia and the South Pacific.



2010 QUEENSLAND FINALIST



OVERVIEW

Aqualogicals' dedicated team of Hydraulic and Fire Services specialists provide consultancy and documentation services for projects ranging from single dwelling residential houses and retail tenancies to large industrial installations and high rise office buildings.

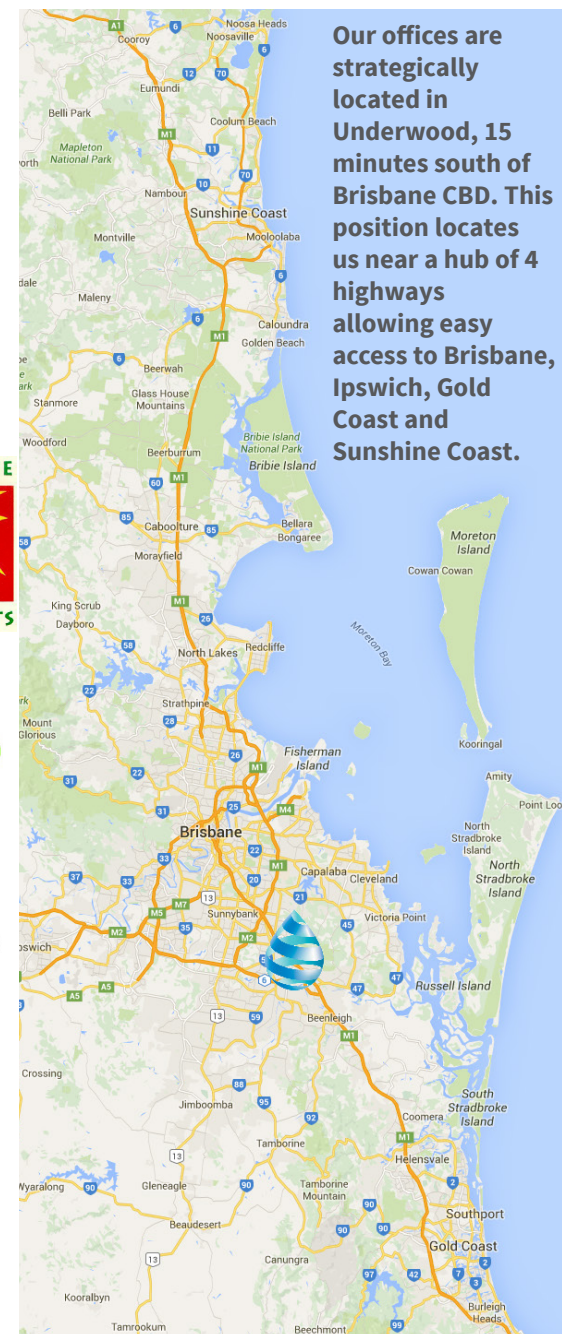
We have successfully delivered projects across all market sectors of construction, in particular;

- **Tenancies**
We provide the client with a three day turnaround from receipt of information to submission for Plumbing and Drainage Compliance permit from the local council
- **Industrial**
- **Residential**
We provide full design to construction status documents for residential projects ranging from single dwellings to large high rise multi dwelling developments
- **Education, including;**
Schools
Tertiary Education
Student accommodation
- **Defence**
- **Food Processing, including the following specialist services;**
High temperature process water
Compressed air
Steam
Process waste treatment
Specialist wash down facilities
- **Retail**
- **Health & Aged Care**
- **Commercial**

Visit our website www.aqualogical.com.au to see a selection of projects delivered in each of the sectors listed above.

CLIENTS

We are proud to be able to include the following as valued clients.....



WHY AQUALOGICAL?

Exceptional Service

Communication - Effective communication is crucial. Our team is trained to provide our clients with a status update, so they are fully aware of progress with the project deliverables. Occasionally we have to communicate delivery issues or concerns, however in these situations we take every endeavour to report this as soon as possible along with our proposed plan of action to mitigate any risk to a timely delivery.

When we receive phone calls, we respond asap, generally within the same day. (Daily time planning allocates a portion of each day to communication including returning missed calls and emails).

Client relations – A conscious effort is dedicated to new and existing client relations. Aqualogical track communication with clients and feedback received. We encourage client relationship development to facilitate a culture of repeat work with trusted partners rather than chasing each and every project.



Gold Coast University Hospital

Evidence Based Solutions

Each designer will have a different approach to providing an engineering solution to a particular set of requirements. Therefore, we apply our best endeavours to provide evidence that the proposed solution is the most appropriate for the situation. This evidence is gathered from the following sources:

- Previous projects

We maintain contact with our clients and building occupiers to obtain feedback and real data of how the installation is performing. This data can be used to inform the design decisions of future similar projects.

- Industry Knowledge

We are active members of the Australian Hydraulic Services Consultants Association (AHSCA). Two of our senior staff sit on the executive committee and are at the forefront of technological and legislative developments in the plumbing industry. We regularly invite manufacturers into our office to provide updates on the latest technology and equipment available.

- Continual professional development

It is mandatory for our designers to continually improve their knowledge and capability by academic study, research, in-house training and technical option evaluation.



Ormeau Health Centre Multi-Bank Rainwater Tanks

THE LOGICAL CHOICE

Tangible Value for Money

During the concept and schematic design stages of the project we challenge and evaluate all aspects of the Hydraulic Services design to establish the most cost effective solution.

We are regularly appointed by main contractors and Hydraulic Services contractors at the Tender stage of a project to review a design developed by a consultant team. More often than not we can identify several areas that can be re-designed using a different system or modified to be more efficient which then results in real savings to the client.

Below is an example of how this approach has worked and actual, verified cost savings.

Project - ELF Stage 2B for John Holland Group, Total Savings = **\$2.043M**

Fire system savings = \$1,430,000

Hot water deletion to basins savings = \$75,000

Rainwater harvesting re-calculations = \$538,000

This is just one example of many in which the savings accrued are far greater than the fee paid to Aqualogical to carry out the detailed design.

For further details of how these savings were achieved, contact our office for a free consultation.

Satisfied Clients

We rely on satisfied clients that return to Aqualogical again and again for Hydraulic and Fire Services designs and advice.

For many clients we are not just their preferred Hydraulic Services Consultant but their only Hydraulic Services Consultant.

This can only be achieved by carefully managing the amount of work we undertake at any one time.

We don't chase all projects, we don't submit proposals to open Tenders and we don't undertake projects that we can't add real value to.

Over 90% of proposals we submit come from direct invitations from clients who know our work and understand our approach.

We communicate regularly with our clients so we can understand what challenges they face and what projects are in the pipeline so we can prepare in advance to have a team in place to best respond to each project as they come to fruition.

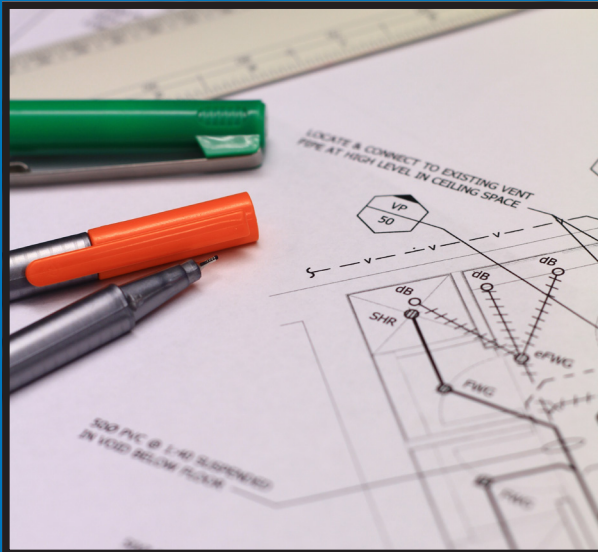


ELF Stage 2B

SCOPE OF SERVICES

Aqualogical provide the following range of services;

- Hydraulic and fire system design & documentation.
- Council applications, negotiations & liaisons.
- Investigation of existing services.
- Budget analysis.
- Design & construct documentation.
- Operation & maintenance manuals.
- As recorded documentation.
- Compliance assessment.
- Design review
- Post occupancy evaluation
- 3D modelling and co-ordination



HYDRAULIC SERVICES

Hydraulic Services includes the range of design activities listed below. All can be provided in-house by Aqualogical;

- Sanitary drainage and sanitary plumbing.
- Vacuum drainage systems.
- Trade waste drainage and plumbing
- Trade waste treatment systems.
- Gutter designs, rainwater downpipes, rainwater drainage and car park drainage.
- Rainwater harvesting & reticulation systems.
- Cold water systems including pumps and storage systems.
- Hot water, high temperature water and warm water systems including pumps and reticulation.
- Hot water generation plants including gas, electric, solar, heat pump, waste heat recovery, steam, coal, diesel and wood fired.
- Gas reticulation including natural, LP, ethylene, oxygen, carbon dioxide and acetylene.
- Erosion & sediment control.
- Sanitary fixtures, tap ware and appliances.
- Compressed air systems including compressors, driers, receivers, reticulation and control.
- Specialist wash down facilities including high pressure, centralised foaming and sanitising systems.
- Steam

FIRE SERVICES

Fire services are often categorised into two components; 'wet' and 'dry'. Wet Fire services are usually provided by the Hydraulics Consultant and dry by the electrical consultant. At Aqualogical we offer the complete fire services design solution, as follows;

- Fire hydrant systems including storage, pumps, boosters and pressure controls.
- Fire hose reel systems, fire extinguishers.
- Gas suppression systems.
- Fire sprinkler systems including FM approved systems.
- Deluge fire suppression systems.
- Wall drenching systems.
- Special hazard suppression systems.
- Smoke detection systems.
- Alternative and fire engineering investigations.
- Emergency warning intercommunication systems.
- Vesda computer room systems.
- Tailored solutions for any hazard.



Industrial Warehouse, Steelforce

How We Work

A small team of senior professionals form the core of Aqualogical. This core team establishes and maintains the high technical standards that we have become known for. The key to the consistent high standard of delivery is staff retention and development.

Aqualogical has unusually high staff retention figures and by providing development opportunities and an invigorating work environment, we can be assured that the knowledge and lessons learnt from our projects stays within the company to be passed on to our clients and also our more junior staff as they develop into tomorrow's senior professionals.

Supplementing the core team are designers, drafters and administration staff who support the delivery of the project documentation. We have a mixture of full time, part time and sub contract designers and drafters local to our office that allow us to adjust our manpower to varying project demands.



Gold Coast University Car Park

Our People



Mark Richards (CPPM, AHSCA)
General Manager

Mark is a senior design consultant with over 25 years experience delivering complex Hydraulic Services projects. He is responsible for managing the production of documentation at Aqualogical. Mark establishes the design philosophy, master-plans the overall hydraulic services, implements value added management reviews, facilitates sustainable design evaluation and organises the resources to deliver Aqualogicals projects on time and to the highest quality.

Mark has had a varied career in building services and project management working across all sectors in Australia, UK, Hong Kong and New Zealand delivering such projects as;

- Gundagai Meat Processors, NSW
- Brisbane 1, Cordelia Street, South Brisbane
- 111 Mary Street (Hotel & Residential), Brisbane City
- Australian High Commission, Nairobi
- Townsville Hospital Redevelopment Stage 3 & 4 Services Engineering
- Gold Coast University Hospital
- Gatton School of Veterinary Sciences
- Heathrow Terminal 5 CIP Lounges (UK)
- Duke of York HQ Development (UK)



Paul McKenna (AHSCA)
Design Manager

Paul is a Senior Hydraulic Services Designer who is also responsible for administering compliance with Aqualogicals Quality Assurance system. He has been the lead designer on some of our largest projects.

He also manages our technical library, making sure it is up to date with latest code requirements and technological innovations.

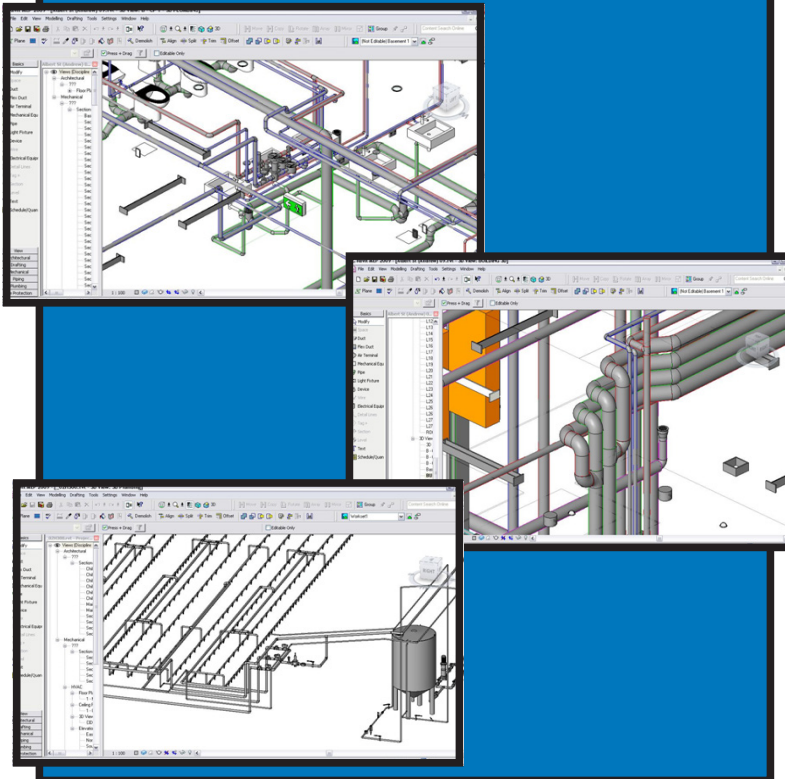
Paul has worked on the following prestigious projects;

- ELF Phase 2B (Enoggera Barracks)
- The Palm Tower U.A.E.
- Aurora Apartments Brisbane
- University of Queensland, Ipswich
- Brisbane Transit Centre
- Sheraton Hotel, London
- Curragh Racecourse, Ireland
- G52 Building, Griffith University
- Element Apartments

Congratulations to Paul for being awarded the Master Plumbers Association Hydraulic Consultant of the Year 2016!

BUILDING INFORMATION MODELLING (BIM)

Our Building Information Model (BIM) experienced design staff utilise the Revit MEP software to launch design documentation to new levels of accuracy. This enables detailed co-ordination to be achieved with the clash detection feature. It also provides for detailed bill of quantities to be prepared. Whether projects require building information modelling or a simplified design process, Aqualogical will cater for your project needs.



OUR PEOPLE (CONT)



Ken Crase (AHSCA)
Senior Designer

Ken is 1st Vice President of the Australian Hydraulic Services Consultants Association (AHSCA) responsible for technical development. His encyclopedic knowledge of the standards and authority requirements is extremely valuable to his clients and colleagues.

Ken also has many years experience providing hydraulic and wet fire designs for multi-story residential, commercial, retail and industrial projects as well as providing compliance advice and reports on fire infrastructure installations within existing developments. A snapshot of Ken's vast project experience as follows;

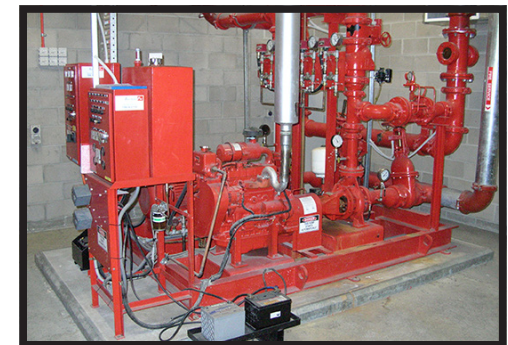
- Westfield and Centro Shopping Centres
- Various projects for Brisbane and Gold Coast City Council
- Queensland Prep School Program
- 400 George Street Building Construction Inspections
- Central Plaza 1 - Water Saving
- Waterfront Place, AMP, Comalco Place and various other refurbishment projects
- Sunnybank Private, Peninsula Private, Pine Rivers and various other Hospital projects

Tim Blinco
Fire Services Designer

Tim is a senior fire services designer who provides both 'wet' (sprinklers, hydrants, hose reels etc.) and 'dry' (detection and alarms) design.

He has provided these services on many projects over the last 15 years including;

- Riparian Plaza
- Circle on Cavill
- Q1 Apartments, Gold Coast
- Oracle Apartments, Broadbeach
- Towers of Chevron Renaissance



DID YOU KNOW?

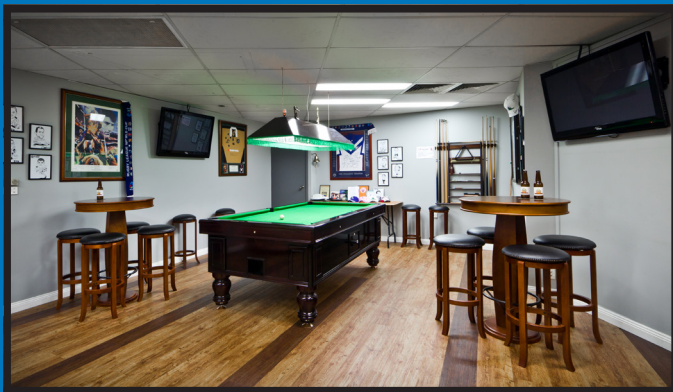
Archeologists have recovered a portion of a water plumbing system from the Pyramid of Cheops in Egypt. The evidence of indoor plumbing in palaces dates back to 2500 BC

A drip from a leaky tap will waste 680 litres of water per month - or 8,160 litres per year.

In a typical home, more than 34,000 litres of water is wasted per year waiting for hot water. This can equate to approximately 15% of your annual water heating costs.

Albert Einstein was made a honorary member of the Plumbers and Steamfitters Union after he announced that he would be a plumber if he had to live his life over again.

In honour of Albert, we have named our in house bar "Einsteins". Pop in for a chat and a beer!



OUR PEOPLE (CONT)



Ashley Monson (AHSCA)
Designer

With over twenty years experience in the plumbing construction industry, sixteen years of these working as a plumber, drainer & gas fitter, prior to four years spent as a hydraulic services design consultant, Ashley has gained a widespread knowledge working in multi-story residential, commercial, retail, and industrial buildings.

Utilising his previous plumbing knowledge, Ashley brings a practical understanding of the 'buildability' and implementation of hydraulics into his projects, ensuring an efficient and reliable design solution is achieved either by documenting in AutoCAD or by 3D modelling in Revit

Some of Ashley's design experience includes:

- Marine Parade Apartments
- 40 Elizabeth St Student Accommodation
- Lower Clifton Terrace Apartments
- Newstead Towers Apartments



Aaron Freeman
Revit Modeller

Aaron is full time Revit modeller who is able to co-ordinate the Hydraulic Services with the Architects layouts and other engineering disciplines on complex projects.

He has developed Aqualogicals standards for Revit drafting to a point where we can boast industry leading templates and families for Hydraulic Services, making the implementation of Revit within the office time and cost effective.

As the industry moves more and more to Building Information Modelling (BIM) delivery, Aqualogical are willing and ready to embark on this exciting progression, largely because of Aarons great work.

Aaron has provided co-ordinated 3D documentation for the following jobs;

- Sunshine Coast University Hospital
- Bank of Papua New Guinea
- Perth New Childrens Hospital
- Knocking Box Project, Casino
- QUT Creative Industries Precinct 2
- Sullivan Nicolaides Pathology, Bowen Hills

SUPPORT STAFF

CAD Drafting

Our CAD drafting team prepares all our hydraulic services documentation including basic design activities, enabling our senior designers to document more efficiently. Our team consists of Daniel Chin, Benjamin Doyle and Nicholas Freeman.



Receptionist and Secretary

Meagan Freeman undertakes all receptionist and secretarial duties at Aqualogical.

Accounts

Ann-Marie Uhr has a B. Com (Accounting) and a Certificate IV in Business Administration. She maintains all company records and accounts.

Contract Staff

Aqualogical have available two senior hydraulic services designers, two hydraulic services designers, one senior fire services designer and three CAD drafters available at short notice for when the need arises.

OUR PEOPLE (CONT)



Joe Griffin (AHSCA)
Designer

Joe leads the design and documentation of our tenancy fit out team. He is responsible for facilitating prompt turnaround of all tenancy fit outs (usually three days from receiving the information to submission to Council.)

As an ex-plumber he understands what is required to be documented to assist the plumber to complete the installation quickly and correctly.



Chris Marrinan
Systems Manager

Chris manages our system and procedures as well as providing an 'As-Constructed' drawing service to plumbing contractors.

He has been with Aqualogical since the very early days and understands every facet of how the company operates.



Anthony Freeman (AHSCA)
Consultant

Anthony founded Aqualogical. He provides design quality assurance advice and checks as well as providing mentoring and concept evaluation.

Anthony's innovative approach to Hydraulic Services design usually results in budget savings and efficiencies for Aqualogicals clients.

Over Anthony's 35 years within the industry he has gained extensive project experience, including the following;

- 123 Albert Street
- Suncorp Stadium
- Swift Abbattoir, Dinmore
- RAAF Amberley
- Riverlink Shopping Centre, Ipswich
- Liverpool Base Hospital
- Brisbane Magistrates Courts
- Marina Mirage Shopping Centre
- Westfield Carindale Redevelopment

METHODOLOGY

CONCEPT

Aqualogical commits to developing the concept design stage with considerable detail in an effort to minimise potential issues at an early stage. At the concept design stage, the design team puts together the basic design for the project. Ideas are presented and challenged by all members of the team. These options are then considered and selections suitable for the project are made based on their merit.

DESIGN DEVELOPMENT

During the design development stage of each project, extensive co-ordination is undertaken with the Architect. This co-ordination is essential as it becomes the back bone for the design. Once completed, this coordination is then extended to review the structural and mechanical requirements for the project. Authority requirements are also reviewed and any potential issues are discussed with the local inspectors to facilitate on site compliance.

QUALITY REVIEW

On completion of the design process, and prior to issuing for tender or council approvals, an independent quality review of the design & drafting standards is conducted. The review results are discussed with the designer and any necessary alterations made.

POST CONSTRUCTION

After Construction is complete our input on the project continues to monitor and communicate with the project team and building occupants to ensure the installed systems are functioning as designed. We will participate in post occupancy evaluations which provides us with valuable feedback to take to the next project as well as making sure the buildings owners and occupants are happy with the finished product.

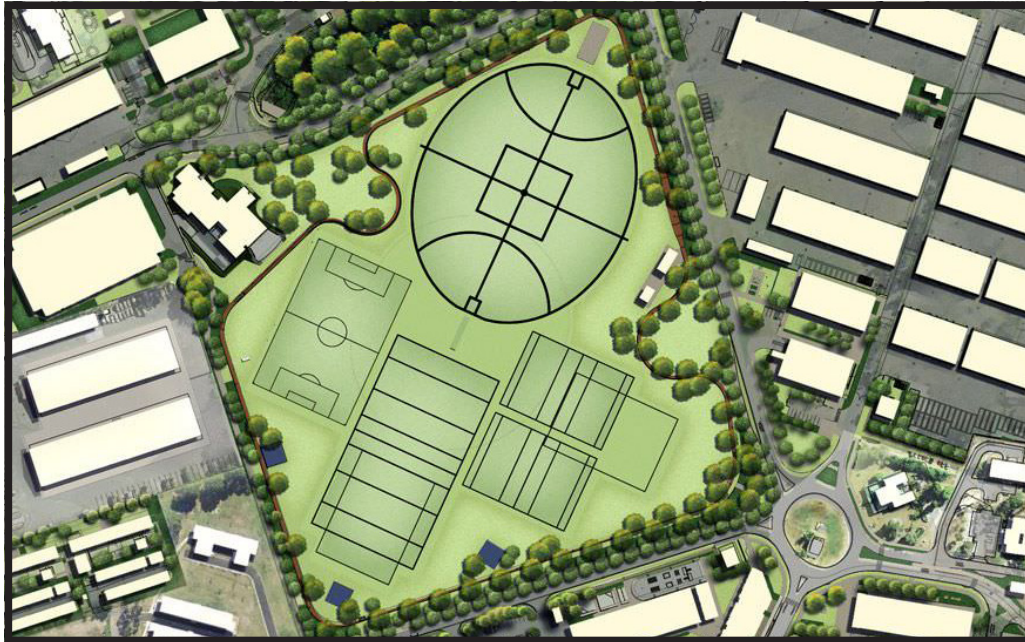
CONSTRUCTION STAGE

When required, regular quality inspections are undertaken during construction and reports prepared with current on site progress and defects indicated. Material samples are inspected and approved. Requests for Information (RFI's) are responded to. Attendance at specific testing and commissioning is also undertaken.

CONSTRUCTION Docs

On completion of the quality review, the documentation can be issued for tender. As part of our service, Aqualogical will undertake the preparation of all hydraulic services applications for local authority design approvals and will monitor the approval process through the local authority. This commitment will often shorten approval times and minimise information requests.

PROJECT SHOWCASE



ELF STAGE 2B

Project Number	A081119
Lead Designer	Paul McKenna
Client/Builder	John Holland Group
Architect	BVN & Conrad Gargett
Value (Build Cost)	\$ 800 Million
Hydraulics Contractor	Beavis & Bartels, Nardia Plumbing, D&F Plumbing, Fairfield Plumbing, Planet Plumbing
Services Documented	Cold, Hot, LPG & NG, Sanitary Drainage and Plumbing, Trade-waste, Stormwater Drainage and Harvesting, Wet Fire Services
Project Duration	March 2009 to May 2015
Innovations	<ul style="list-style-type: none"> Deleted the need for 22 individual hydrant pumpsets – by implementing a site wide fire pump station solution to capture all current and future works. This not only provided a capital cost saving, it also provided future on-going maintenance savings A Site wide Natural Gas ring main was introduced that services all current as well as future proofing defence requirements
Specific Challenges	<ul style="list-style-type: none"> Designing site specific hydraulic services, to over 200 individual buildings, spread over brown and green field building sites within a 9 sq. Km area complete with a combined 220,000m² of building GFA. Working within 4 individual design teams, comprising multiple architects, engineers and builders at once, whilst also controlling external specialist sub-contractors (eg swimming pool specialist) And then following the project through to construction, inspection and handover while dealing with 5 different construction teams.
Estimated Savings	<ul style="list-style-type: none"> \$1.43 million – Fire System savings (22 x individual fire hydrant pumpsets) - saving does not include the building savings etc. \$75,000 - Hotwater deletion to Basins \$538,000 – For change in rainwater harvesting calculation. We reduced the rainwater volumes by 538kL - by applying usage calculations vs QDC calculations <p>\$ 2.043 million Total Saving</p>

PROJECT SHOWCASE



123 ALBERT STREET

Project Number	A080834
Lead Designer	Anthony Freeman
Client	Planet Plumbing
Architect	Hassell Architects
Builder	Laing O'Rourke
Value (Build Cost)	\$359M
Hydraulics Contractor	Planet Plumbing
Services Documented	Sanitary plumbing & drainage, gas, cold water, hot water, downpipes and gutters, rain water drainage, fire hydrant service and fire hose reel service
Documentation Period	August 2008 to January 2009
Project Completion Date	July 2011
Innovations	<ul style="list-style-type: none">• The first premium grade tower in Brisbane to achieve 6 star Green Star As Built• Grey water from waste fixtures was treated and re-cycled for irrigation• Rain water was harvested for WC flushing, wash down and irrigation• The gas supply was designed to power a tri-generation energy system
Specific Challenges	<ul style="list-style-type: none">• This project was the first to be documented in Revit by Aqualogical• Extensive water and energy usage reporting, calculations and strategies to assist with achieving the 6 star Green Star accreditation

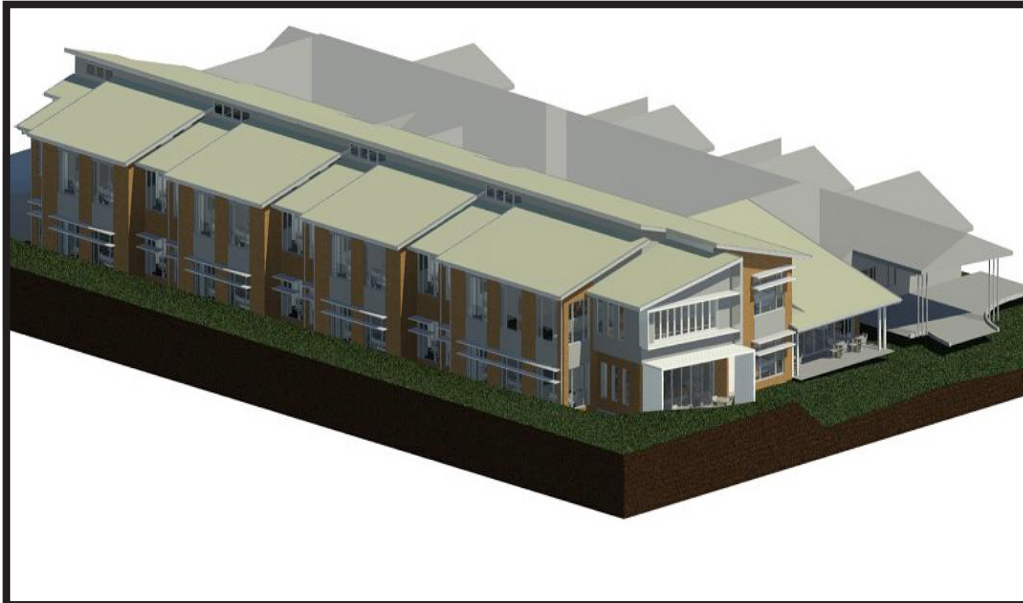
PROJECT SHOWCASE



URBANEST STUDENT VILLAGE

Project Number	A080314
Lead Designer	Anthony Freeman
Client	Nardia Plumbing
Architect	Cox Rayner
Builder	John Holland Group
Value (Build Cost)	\$80M
Hydraulics Contractor	Nardia Plumbing
Services Documented	Sanitary plumbing & drainage, gas, cold water, hot water, downpipes and gutters, rain water drainage, fire hydrant service and fire hose reel service
Documentation Period	March 2008 to October 2008
Project Completion Date	December 2009
Innovations	<ul style="list-style-type: none">• Pre-fabricated bathroom pods were built off site• A heat trace system was used to maintain the heat within the hot water services in lieu of a secondary piped circulating system• Grey water from waste fixtures was treated and re-cycled for irrigation
Specific Challenges	<ul style="list-style-type: none">• The pre-fabricated bathroom pods were manufactured in Italy and did not comply with Australian plumbing standards. Alterations were required to be made to each pod to achieve plumbing approval

PROJECT SHOWCASE



SUNNYMEADE NURSING HOME

Project Number	A140741
Lead Designer	Anthony Freeman
Client	Lambert & Smith Architects
Architect	Lambert & Smith Architects
Builder	McNab
Hydraulics Contractor	Redbank Plains Plumbing
Services Documented	Sanitray plumbing and drainage, hot and cold water services, backflow prevention, downpipes and gutters.
Documentation Period	November 2014 to April 2015
Project Completion Date	23 December 2015
Innovations	The final design and documentation was detailed to the extent that it provided the plumbing contractor with a clear and concise method and sequence of new works in order to maintain operations to the remainder of the facility. This resulted in improving the efficiency and costs during construction whilst minimising disruption to the existing building habitants.
Specific Challenges	The Hydraulic services design was required to allow for the nursing home to continue operation whilst the new building was being built with no interruptions to water and drainage services. The redeveloped building doubled in bed size. The hydraulic design was able to incorporate the existing water and drainage services with no infrastructure upgrades.

PROJECT SHOWCASE



MARSDEN SHOPPING CENTRE

Project Number	A120102
Lead Designer	Ken Crase
Client	Cousins Hedeman Property
Architect	Thomson Adsett
Builder	Adco Constructions
Value (Build Cost)	\$12million
Hydraulics Contractor	Accurate Plumbing
Services Documented	Sanitary plumbing and drainage, trade waste drainage, gas service, cold water, hot water, rain water drainage, harvesting & reticulation. Fire hydrant service, fire hose reel service, fire sprinkler systems and fire detection and alarm systems
Documentation Period	July 2013 to April 2014
Project Completion Date	August 2015
Innovations	Fire Hydrant flow and pressure testing at the start of the project indicated marginal compliance in regards to required pressure. However, instead of installing fire hydrant pumps, Aqualogical carefully designed the system to minimise system head losses. In the event that in the future mains pressure is reduced, we designed in space and pipework provision to install a hydrant pump with minimal expenditure or disruption.
Specific Challenges	<ul style="list-style-type: none">Contaminated soil due to a Petrol Station being located on the site previously.Maximising lettable area – the use of syphonic rainwater drainage reduced the number of downpipes in lettable space.
Estimated Cost Savings	Fire Hydrant Pump - \$125,000

PROJECT SHOWCASE



363 Adelaide Street - 700 bed student accommodation building. Conversion/refurbishment of 1986 office tower to new class 2 student accommodation



363 ADELAIDE STREET

Project Number	A150331
Lead Designer	Paul McKenna
Client	Beavis & Bartels – (under a D&C) Owner – Valparaiso Capital / Student One
Architect	Arkhefield
Builder	Hutchinson Builders
Value (Build Cost)	\$110 million (\$45 million refurbishment allowance)
Hydraulics Contractor	Beavis & Bartels
Services Documented	Sanitary plumbing and drainage, Stormwater, Natural Gas, Hot & Cold water, Fire Hydrant and Hose reels, and combined sprinkler / hydrant booster assembly
Documentation Period	May 2015 to December 2015
Project Completion Date	June 2016
Innovations	Transforming an existing 18 storey 'class 5' office building, built in 1985 – into a modern 700 bed and bath Student Accommodation Building, complete with tradewaste and natural gas provision for 3 x retail and 1 x restaurant .
Specific Challenges	<ul style="list-style-type: none">• Dealing with and retaining the existing building structure – that had little to no, existing information. Detailed site visits were required, to gain an understanding of the existing site constants.• Attempting to understand the complete existing hydraulic systems, with little to no existing information.• Attempting and successfully reusing some existing hydraulic elements, to provide cost savings for the contractor.



For more information contact us by:

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