NEV Water

Narara ecovillage inspired by life

NEV Directors 2021

Full name:	Verena Olivier
Position title:	Director and Chairman
Date of birth:	
Residential address:	

Full name:	Lynita Suzanne Clark
Position title:	Director
Date of birth:	
Residential address:	

Full name:	Laurence James Perrin
Position title:	Director
Date of birth:	
Residential address:	

Full name:	Georgina Dawn Price
Position title:	Director
Date of birth:	
Residential address:	

Full name:	Anthony Rex Hester
Position title:	Director
Date of birth:	
Residential address:	

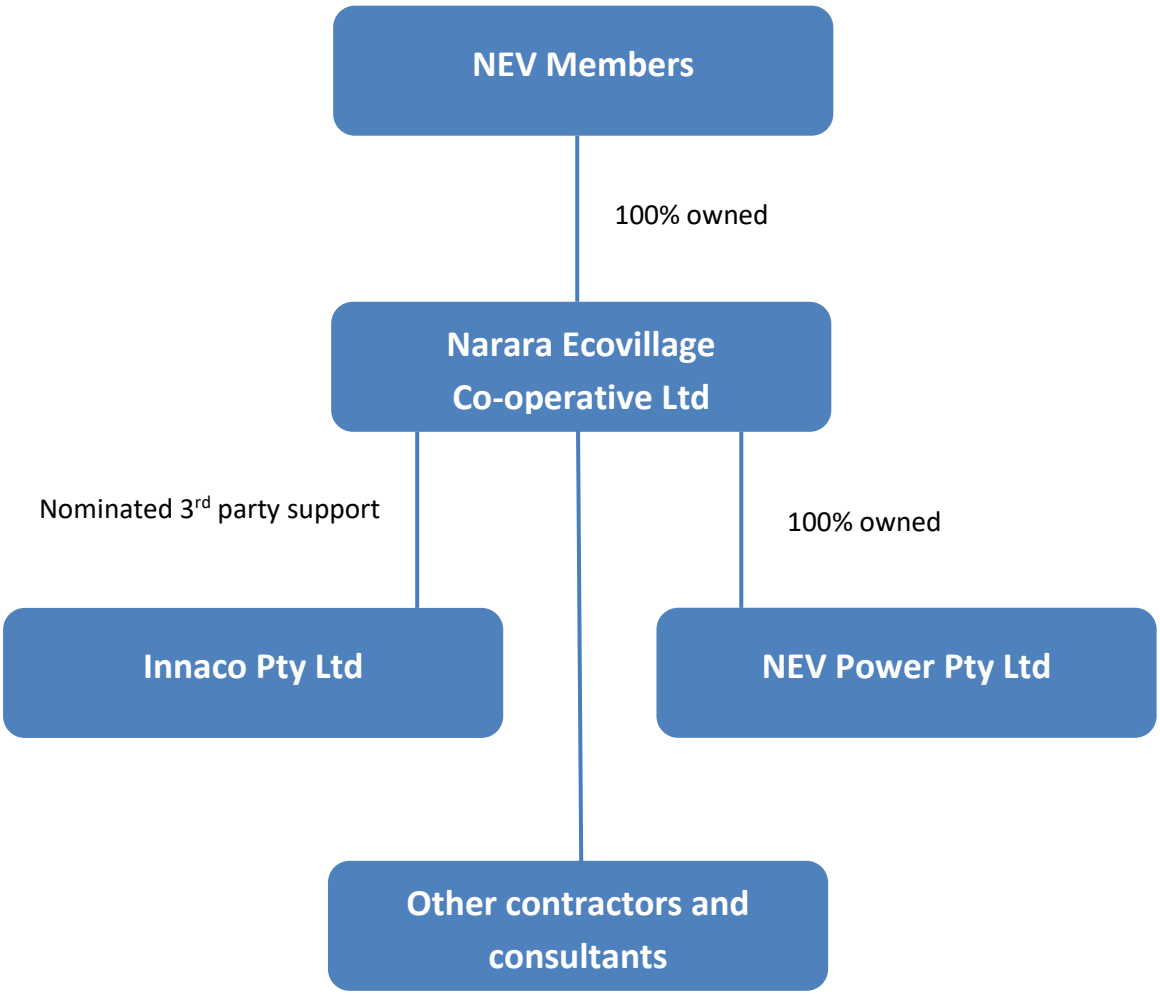
Full name:	Richard Ewan Denham
Position title:	Director
Date of birth:	
Residential address:	

Full name:	Leonard Grant Rickey
Position title:	Director
Date of birth:	
Residential address:	

NEV Water

Narara Ecovillage Co-operative Ltd

Organisational Diagram



CVs of Key Personnel

Contents

1. Narara Ecovillage Co-Operative Pty Ltd

Narara Ecovillage Co-operative Limited (NEV) is responsible for the construction, operation and maintenance of all potable, non-potable and sewerage infrastructure in the scheme from source to customer connection.

NEV will be responsible for the design, construction, commissioning and maintenance of the distribution networks up to the customer connection points in accordance with the Water Services Association of Australia (WSAA) guidelines.

Narara Ecovillage Co-operative Ltd (NEV) has no direct employees and all workers are engaged as either contractors or volunteers.

Table 1. **Narara Ecovillage - Summary of Skills and Experience**

Name	NEV Role relevant to IPART	Expertise	Dominant Background relevant to water management	Skills and Experience – examples – including water management and construction
Detailed Biographies				
John Talbott	NEV CEO Project Team	Technical Organisational	Ecovillage design and construction; High profile sustainability projects Concept development and overall planning for housing, infrastructure, renewable energy production, distribution and infrastructure management; facilitation of community consultation and stakeholder engagement over a twenty year period	Director and project manager at Findhorn ecovillage construction including energy sustainability & wastewater treatment in Scotland. Infrastructure maintenance including potable water distribution network, sewerage system and recycled water network for treated effluent from the Living Machine.
Geoff Cameron	Head of NEV Water Project Team (under contract)	Technical Financial	Water analysis, process plant construction and operation, Project management, Information Technology	Technical officer on food processing plant construction and operation, water analysis at Kraft Foods Ltd, 10 years senior management in construction industry.
David Parris	Contracts Manager (under contract) Legal & Finance Team Project Team	Technical Organisational	Executive management of operations of large scale water & power infrastructure, Senior management of energy/water utility, Project management of major infrastructure projects	Managing the water and electricity operations of the Snowy Scheme, GM at ACTEW, managing the development & construction of AGL major power and hydro projects e.g. $230m Bogong project.
Richard Denham	NEV Director Legal & Finance Team Project Team Land Team	Technical	Registered professional engineer with a degree in Natural Resources and has over 25 years of experience in natural resource management within the public sector	16 years in water resource management and aquatic ecology; 6 years in Crown land policy; and 4 years in Department of Primary Industries policy strategy and reform

Name	NEV Role relevant to IPART	Expertise	Dominant Background relevant to water management	Skills and Experience – examples – including water management and construction
David Roberts	Leader of Project Team (under contract)	Technical	Development of Water Sensitive Urban Design projects for City councils including stormwater treatment devices for irrigation (8 years) Director of rainwater tank installation company (5 years)	Multiple rainwater and stormwater reuse projects including 160kL rainwater reuse and filtration system for Willoughby Leisure Centre, 5ML Concourse tank in Chatswood, Stormwater Harvesting for irrigation in Artarmon.
Summary CV and Skills				
Deborah Mohr	Narara Ecovillage Financial Controller (under contract)	Financial	Chartered Accountant	Financial management, accounting, billing
Megan Wallace	Business Support Team	Financial	BComm (ACA) 25 years experience in financial management	Accounting, billing, treasury and budgeting
Steve Errey	Water Infrastructure Manager (under contract)	Technical	Mechanical Engineer, sewage bio-solids recycling	Project officer at Gosford City Council running project on recycling of green waste and sewage bio-solids. Engineer on hydro-electric power generation systems.
Grant Rickey	NEV Director Project Team	Technical	20 years Project Manager and State Manager in property development and construction industry	Construction management, asset management

Name	NEV Role relevant to IPART	Expertise	Dominant Background relevant to water management	Skills and Experience – examples – including water management and construction
Donna Carey	Business Support Team Land Team Buildings and Infrastructure Team	Technical	Compiling submissions to the Department of Health (15 years). Commercial Business Analyst at Roche Pharmaceuticals (5 years).	Working in research at the University of Sydney Science and Pharmacology Research Commercial Business Analyst
Mark Fisher	Project Team	Technical	Large industrial projects and engineering / mining construction, Project management and financial control	Pumping installation and maintenance programs Research, design & installation of a filtration and recycling plant with 3Ml/day capacity in a highly sensitive environmental area of Sydney water catchment.
Richard Cassels	Legal & Finance Team	Financial	Director of Exhibitions and Publications, and later General Manager of the Queensland Museum South Bank	Environmental compliance, organisational management
Tony Hester	NEV Director Buildings and Infrastructure Team Project Team	Technical	Building – Residential and Commercial construction, Project management, Company and Not For Profit Directorships	Building – Residential and Commercial construction Project management Supervisory experience Team leadership
John Shiel	Legal & Finance Team	Technical	Power Station water structures; management and design of large contracts; water efficiency in buildings; research; Information Technology	Design of canals, bridge piles, settling basins including filtration; managed the construction contract for Eraring Power Station large water tanks; Led specification team for the $20m Mount Piper Site Preparation; conducted energy and water audits for office and industrial buildings.

Name	NEV Role relevant to IPART	Expertise	Dominant Background relevant to water management	Skills and Experience – examples – including water management and construction
Brett Jeffery	Project Team	Technical	Electronics & data communications wired and wireless	Owner and director of Jeffery Electronic Control Pty Ltd. Design, manufacture, commission and post-sale support of irrigation and environmental control systems.
George Gilmour	Insurance Team, Business Support Team Smart Grid Team	Technical	30 years experience in the insurance industry	Insurance and risk management
Matt Lloyd	Plumbing support contractor	Technical	Licensed plumber	Asset management
Mike Crawley	Buildings & Infrastructure Team Land Team	Technical	A background in Electrical Engineering. Degree in Computer Science. A long career in Information Technology specialising in databases and billing systems.	Small scale aquaponics systems requiring water quality management and automation of pumping and irrigation valves achieved by custom designing microcontroller hardware and software
General Administrative and Responsibility Statement				
Stuart King	NEV Company Secretary	Financial	Head of Group Business Strategy, Sydney, National Australia Bank Financial management, Company directorships	Financial management, business strategy, organisational management
Laurence Perrin	NEV Director Legal & Finance Team	Financial	25 years experience in investment funds management	Financial management

2. Detailed Biographies

I. John Talbott – NEV CEO

John Talbott is the CEO of Narara Ecovillage Co-Operative and project team member. He is a registered professional engineer and was Director of Findhorn Ecovillage Project in Scotland for over twenty years. During that time, he pioneered many elements of sustainable community design, infrastructure and building, including a wind farm, ecological waste water treatment plant and many green building techniques and systems.

He is the author of Simply Building Green: A Technical Guide to the Ecological Houses at Findhorn Foundation.

II. Geoff Cameron – Head of NEV Water

Geoff Cameron is the Head of NEV Water. He has a Masters in Applied Science and has experience as Technical Officer with Kraft Foods Ltd. His role there included product and ingredient analysis including water analysis.

He has 40 years experience in the food, biotechnology and IT industries, most recently as IT Manager for a national construction group, a position he held for a period of 10 years. His pervious IT experience includes 6 years as NSW State Manager for a distributor of medical imaging systems. This role involved responsibility for sales and marketing operations. He also has 5 years experience in ERP project management which provides exposure to accounting, billing, inventory and asset management systems across a range of industries.

III. Richard Denham – Director and Head of Legal and Finance Team

Richard Denham is a registered professional engineer with a degree in Natural Resources and has over 25 years of experience in natural resource management within the public sector. This includes 16 years in water resource management and aquatic ecology; 6 years in Crown land policy; and 4 years in Department of Primary Industries policy strategy and reform. His experience includes a comprehensive range of natural resources areas including water resources and water quality management, riverine ecology and geomorphology, soils, land and vegetation management. He has a comprehensive knowledge of the operation of government and of government organisations, including Cabinet and legislative processes, policy development and Commonwealth – State jurisdictional issues.

IV. David Parris – Risk and Audit Committee Lead, Commercial Manager

David is currently responsible for managing the commercial risks associated with the 150 home Narara Ecovillage (NEV) Development and ensuring the development is fully aligned with NEV's financial goals. He specialises in contracts for infrastructure development and assessment of project feasibility.

David's career has been concentrated in the renewable energy field with many years' experience in all aspects of water, hydro-electric, wind and solar projects. His previous role involved the planning, acquisition, development and construction of new generation projects for AGL's Power Development group. The projects include gas fired and renewable generation. In 2009, David investigated leading edge solar projects in the USA and Spain.

His major achievements include researching and implementing the AGL power generation vertical integration strategy and achieving commercial viability for the 420 MW Macarthur Wind Farm in Victoria. He has managed the expansion of AGL's generation portfolio to include wind, solar, gas fired and hydro projects. He has managed the development of a number of large Australian wind energy projects.

David's previous roles have included managing Energy Trading for retail and generating businesses, business development and managing the Operations and Maintenance for a large NSW hydro generation business, corporate development manager, project manager and engineering consultant.

He has qualifications in Corporate Management, Applied Finance, Science and Engineering.

V. David Roberts – Environmental Manager

David Roberts is the Environmental Manager of the Narara Ecovillage project. He also is the Sustainability Projects Coordinator at Willoughby City Council. In this role, he has a focus on water sensitive urban design; management of internal staff and contractors on storm water harvesting for reuse on council ovals.

He has also been a company director of a water tank design and installation company, a Coastcare Facilitator for the Department of Land and Water Conservation and a Support Officer for the Sydney Northern Beaches Catchment Management Committee.

Narara Ecovillage Co-operative Ltd
25 Research Road, Narara NSW 2250
ABN 86 789 868 574

Position Description
Chief Executive Officer

Position: Chief Executive Officer

Location: Narara Ecovillage Ltd. 25 Research Road, Narara NSW 2250

Reports to: NEV Board

Context

Narara Ecovillage Co-operative Ltd (NEV) is creating a socially, environmentally and economically sustainable community and village. NEV plans to lead the way in terms of governance, self-sufficiency, construction and living and managing its own water is critical to the success of the project. As this project aims to have state of the art technology combined with traditional values there will be ample opportunity to set precedent and create policies, systems and arrangements which do not currently exist.

As the WICA license holder, NEV will be responsible for the design, construction, commissioning, operation and maintenance of all potable, non-potable and sewerage infrastructure distribution networks from source up to the customer connection points in accordance with the Water Services Association of Australia (WSAA) guidelines.

Aim

The aim of this position is to provide leadership to all aspects of the village, including the external relationships, reputation and delivering the project on time and within agreed financial bounds. This role ensures viability, direction, and coherence, aligned with the mission of NEV. There is a direct reporting to the board and members, keeping all informed as to the progress and new developments as the project progresses.

Abbreviations

EEO	Equal Employment Opportunity
NEV	Narara Ecovillage Co-operative Ltd
WSAA	Water Services Association of Australia
VMA	Vision Mission Aim

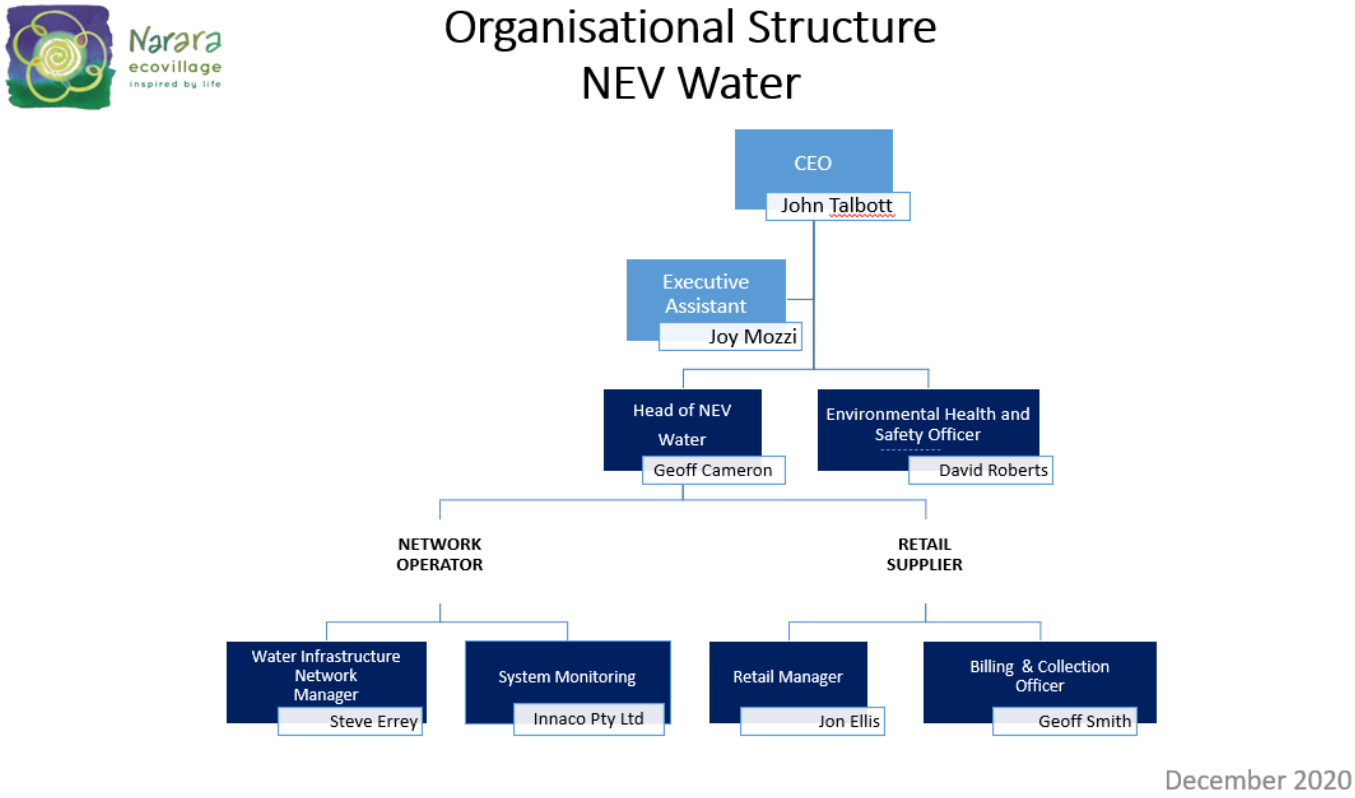
Domain

All aspects related to the physical, economic, social and environmental well-being of NEV.

Role Relationships

Internally

- Reports directly to Board
- Direct reports include Head of NEV Water, Head of NEV Energy and the Project Manager
- Leads of the various groups, teams and circles also inform and include CEO in decision making as per the Sociocratic process
- This role ensures cross-functional alignment and directions



Externally

This role has a strong external focus, liaising with legal, local and state government, environmental parties, including IPART, Gosford Municipality, Telstra, architects and other contractors and consultants.

It is incumbent on this role to identify opportunities and new partnerships to ensure viability of the project.

Key Accountabilities

Position-Related

	Accountability	% of Position	Measurement Criteria
1.	**Financial** Ensure that the project is delivered on time, as per the constraints and opportunities of the context and within the board's approved budget. Create and champion the funding model ensuring ample finance is available for the project. As far as possible ensuring self-funding. Set and approve Operating Budgets in conjunction with legal and finance team Ensure future sustainable economic viability for NEV through the legal and finance team as well as the Economic well-being team Ensure the growth of membership and development of the assets to fulfil the intent of the village Approve disposal of assets up to $50 000	20%	• Project delivery within budgeted limits • Annual budgets presented for board approval on time
2.	**Project** Ensure the project is appropriately scoped, planned and monitor progress. Lead the process for all development applications, approvals, licences and certification where appropriate. Have oversight of all developments in the stages of the project ensuring coherence amongst all functions. Ensure a safe and healthy environment for the project including all members, workers and suppliers. Inform external parties as to the progress of the project.	20%	• Project delivered according to project schedule • Zero lost days due to injury
3.	**External Parties** Identify and source all external parties who will advise and create contractual and legal requirements Negotiate arrangements and service level agreements where appropriate Terminate relationship with external parties when necessary.	10%	• Contracts signed with all external contractors and consultants and board approved

	Accountability	% of Position	Measurement Criteria
4.	**Legal** Ensure the project is delivered within all legal parameters. Identify and liaise with selected legal parties to create all contracts, licences, agreements and ensure compliance. Work with legal partners to ensure the interests of the community and project are well served. Ensure the project and community has appropriate governance and compliance including a Community Management Statement Where there is no precedent ensure that the legal parameters and policies are created.	10%	• Zero delays due to legal disputes • Zero complains from the public
5.	**Social** Participate in all aspects of the social development of the community as per Sociocracy Ensure that all prospective members are informed and considered within the processes of NEV Provide regular feedback and communication to the board and members as to the progress of the project and any obstacles that may occur. Ensure a culture of co-operation, sustainability, cohesion and respect is created aligned with the values of NEV. Participate and present in social events as required Work closely with NELN as to the outreach and educational role of NEV	10%	• Zero complaints from members
6.	**Managerial Leadership** Ensure the project is staffed and resourced, negotiate terms and contracts for delivery Select and recruit Heads of Water, Energy and Project Management Assign targets, negotiate terms and service level agreements Manage performance and provide review Monitor effectiveness and ensure the community is satisfied with service delivery. Ensure the broader community is informed of and included in developments within NEV	10%	• High surveyed level of satisfaction among members and contractors
7.	**Environmental** Ensure that all aspects of the project include awareness of impact to the environment and ecology of the site. Ensure the principles of Permaculture are inherent in the design, build and maintenance of NEV	5%	• 100% compliance with environmental targets and policies

	Accountability	% of Position	Measurement Criteria
8.	Work collaboratively with other organisations and ecovillages to further the movement. Keep abreast of developments within the energy, water usage, sustainability and social environments and alert the board and membership as to trends.	5%	• Number of references to the NEV project in external publications

Reporting Requirements

- Monthly reporting of key indicators for Board and Members
- Statutory reporting as applicable
- Personal timesheets and expenses

Perfect Performance

Autonomous achievement of the following:

- All reporting to stakeholders up to date
- Project delivered in scheduled timeframe
- Project delivered within budget
- High level of surveyed satisfaction among members and contractors

Actions Requiring Approval

- All expense items in excess of authorised limits
- All capital expenditure outside authorised delegation
- Signing contracts

Specific Responsibilities

- Supervise contractors and consultants working on the project
- Carry out risk assessment
- Ensure that all aims of the project are met
- Ensure the quality standards are met
- Ensure NEV's safety and environmental policies and objectives are achieved
- Use NEV's IT systems to track documents, expenditure and progress
- Recruit specialists and sub-contractors
- Monitor sub-contractors to ensure policies, guidelines and standards are maintained
- Oversee the project accounting, costing, billing and payments
- Provide guidance and leadership to the wider NEV community and teams

Supervisory Responsibilities

This position has a number of direct reports.

Organisational Responsibilities

All employees and contractors have general organisational responsibilities. These include:

1. Understanding and complying with the spirit and content of NEV's *Code of Conduct*. A copy of the Code is provided at formal induction and is available on NEV's intranet under "Human Resources".
2. Fulfilling all work health and safety responsibilities as outlined in the *Work Health and Safety Policy*, which is provided to all workers at induction and available on NEV's intranet under Human Resources – Policies and Procedure.
3. Complying with NEV's Requirements for Engaging Contractors and Consultants when engaging contractors.
4. Responsible and accountable for creating, registering and keeping records as required by the State Records Act 1998, abiding by the Information Management Policy and using the required systems and procedures.
5. Understanding and undertaking all work in accordance with relevant NEV policies and procedures. [NEV's policies and procedures may be varied, changed or revoked by NEV at any time].

Background Knowledge Required for Position

Training and Education

Essential

- Bachelor's Degree in Engineering or property development or equivalent
- Property development experience
- Alternative energy generation and certification experience
- Water infrastructure construction and management experience

Skills and Knowledge

General

- High level of written and verbal communication skills and interpersonal and negotiation skills, enabling liaison with all levels of government, business, community and Council.
- Strong leadership skill
- Excellent organisational skills
- Awareness of and commitment to the principles of Work Health and Safety (WHS) and a commitment to attend relevant training
- Awareness of and commitment to the principles of Equal Employment Opportunity (EEO)

Specific

- Ecovillage development
- Water and energy management

Experience

- Delivery of Large complex development projects
- Stakeholder management
- Living in community

Special Requirements

- Participation in after-hours work may arise in order to ensure operational consistency.

Narara Ecovillage Co-operative Ltd
25 Research Road, Narara NSW 2250
ABN 86 789 868 574

Position Description
Head of NEV Water

Position: Head of NEV Water

Location: Narara Ecovillage Ltd. 25 Research Road, Narara NSW 2250

Reports to: CEO

Context

Narara Ecovillage Co-operative Limited (NEV) is creating a socially, environmentally and economically sustainable community.

As the WICA license holder, NEV will be responsible for the design, construction, commissioning, operation and maintenance of all potable, non-potable and sewerage infrastructure distribution networks from source up to the customer connection points in accordance with the Water Services Association of Australia (WSAA) guidelines.

NEV plans to produce and treat water on site for the use of households and for possible commercial applications. This aspect is critical to the success of the village and the quality of life of all those living and visiting NEV. NEV aims to be self-sufficient in providing water and be iconic in water management for a community.

Aim

The aim of this position is to lead a cross functional team to ensure that all water supply, usage, retail and operations are effective. As this community will be one of the first to manage its potable water as well as its waste water there will be a strong emphasis on using appropriate technology, systems and processes for current and future use.

Abbreviations

EEO	Equal Employment Opportunity
NEV	Narara Ecovillage Co-operative Limited
WSAA	Water Services Association of Australia

Domain

All aspects related to the supply and retail of water to the NEV community. Safety policies, contract negotiation, compliance and regulatory requirements related to water, water quality and dam safety.

Role Relationships

Internally

- Reports directly to the CEO
- Has three direct reports – Retail Manager, Water Infrastructure Network Manager and the Reservoir & Catchment Manager
- This role may work collaboratively with NEV energy and Project management to ensure coherent and aligned policies and processes are applied within the unit.

Externally

This position will liaise directly with external parties, legal parties, suppliers and contracted companies in establishing the contractual agreement, negotiating terms and service level agreements for significant relationships.

Key Accountabilities

Position-Related

	Accountability	% of Position	Measurement Criteria
1.	**Establish NEV Water as an organised, accountable business unit with clarity of purpose, processes and function. Ensure appropriate structure and clarity of accountability.** **Recruit and select a team to ensure the objectives of NEV Water are met.** **Create a culture of safety awareness and compliance with regulatory requirements.**	30%	• All positions filled and contracts signed • 100% compliance with NEV water policies and objectives
2.	**Create and communicate Water and Asset management objectives and plans.**	20%	• Communications plans created, maintained and implemented
3.	**Create and monitor annual budget, provide reports as required.**	10%	• Annual income and expenditure within budgeted amounts
4.	**Ensure compliance with all legal, regulatory and safety requirements. Create and ensure all relevant policies are in place for water supply and retail.**	10%	• Zero lost days due to injury • 100% compliance with environmental policies and objectives

	Accountability	% of Position	Measurement Criteria
5.	**Liaise with external parties, contractors and suppliers to ensure an efficient and effective service is provided. Negotiate contracts, service level agreements and working arrangements between significant partners.**	5%	• 100% network up time and compliance with NEV Water policies and objectives
6.	**Oversee preventative plans for Hazards and Risks management.** **Ensure all critical incidents and emergencies related to all water are managed including complaints and customer satisfaction.**	10%	• Level of surveyed customer satisfaction
7.	**Ensure Best Practice is adopted by NEV water including ensuring all systems and processes are documented and adhered to. Be alert to and inform Project Director as to developments within Water Management to ensure optimal technology and systems are in use.**	10%	• All systems and procedures documented
8.	**Work collaboratively with other functions in the village, NEV Energy and Co-operative to inform and contribute to the aims of the community.**	5%	• 100% attendance at co-ordination meetings

Reporting Requirements

- Quarterly reporting of key indicators to internal and external stakeholders
- Statutory reporting as applicable
- Personal timesheets and expenses

Perfect Performance

Autonomous achievement of the following:

- All reporting to stakeholders up to date
- All positions filled and contracts signed
- 100% compliance with NEV water policies and objectives
- All systems and procedures documented

Actions Requiring Approval

- All expense items above authority limits
- All capital expenditure
- Creation of positions and hiring of staff

Background Knowledge Required for Position

Training and Education

Essential

- Bachelor's Degree in Engineering or equivalent in Water management
- White Card (Work Health Safety Construction Induction, NSW) or a willingness to obtain this card before commencement

Desirable

- Tertiary qualification in management
- Membership of an appropriate water industry professional association
- Possession of a current "C" Class Driver's Licence

Skills and Knowledge

General

- High level of written and verbal communication skills and interpersonal and negotiation skills, enabling liaison with all levels of government, business, community and Council.
- Ability to work independently and as a team member
- Excellent organisational skills
- Awareness of and commitment to the principles of Work Health and Safety (WHS) and a commitment to attend relevant training
- Awareness of and commitment to the principles of Equal Employment Opportunity (EEO)

Specific

- Good understanding of water industry compliance and regulatory framework
- Managing, coaching, and mentoring staff in professional, technical, and business development tasks
- Responsibilities for business development, sales, financial performance and client deliverables and schedules
- Work with the CEO and other team leaders in NEV Water strategic planning activities
- Experience in managing compliance with environmental and workplace safety policies

Experience

- Operational experience in the water industry
- Negotiations and stakeholder management
- Ability to effectively lead a team and proactively shape work culture though proactive systematic planning and the use of clear work processes and personal example
- Operational expertise in all aspects of water operations management
- Experience in driving efficiencies through work processes

Special Requirements

Participation in after-hours work may arise in order to ensure operational consistency.

Position Description
Water Infrastructure Network Manager

Position: Water Infrastructure Network Manager

Location: Narara Ecovillage Water Utility office, 25 Research Road, Narara NSW 2250

Reports to: Head of NEV Water

Context

Narara Ecovillage Co-operative Limited (NEV) is creating a socially, environmentally and economically sustainable community.

As the WICA license holder, NEV will be responsible for the design, construction, commissioning, operation and maintenance of all potable, non-potable and sewerage infrastructure distribution networks from source up to the customer connection points in accordance with the Water Services Association of Australia (WSAA) guidelines.

NEV plans to produce and treat water, as well as energy, on site for household use, irrigation and possibly for small commercial applications. This aspect is critical to the success of the village and the quality of life of NEV residents and visitors. NEV aims to be self-sufficient in providing water and energy and aims be a leader for sustainability water and energy management for a community.

Aim

The aim of the Water Infrastructure Network Manager role is to manage the day-to-day operation and maintenance of the potable water, non-potable water and sewerage networks to ensure customer health and safety, protection of the environment, compliance with relevant license conditions, laws and regulations and to develop systems and procedures to ensure best practice approach to network management.

Abbreviations

IOP	Infrastructure Operating Plan
NEV	Narara Ecovillage Co-operative Limited
WSAA	Water Services Association of Australia

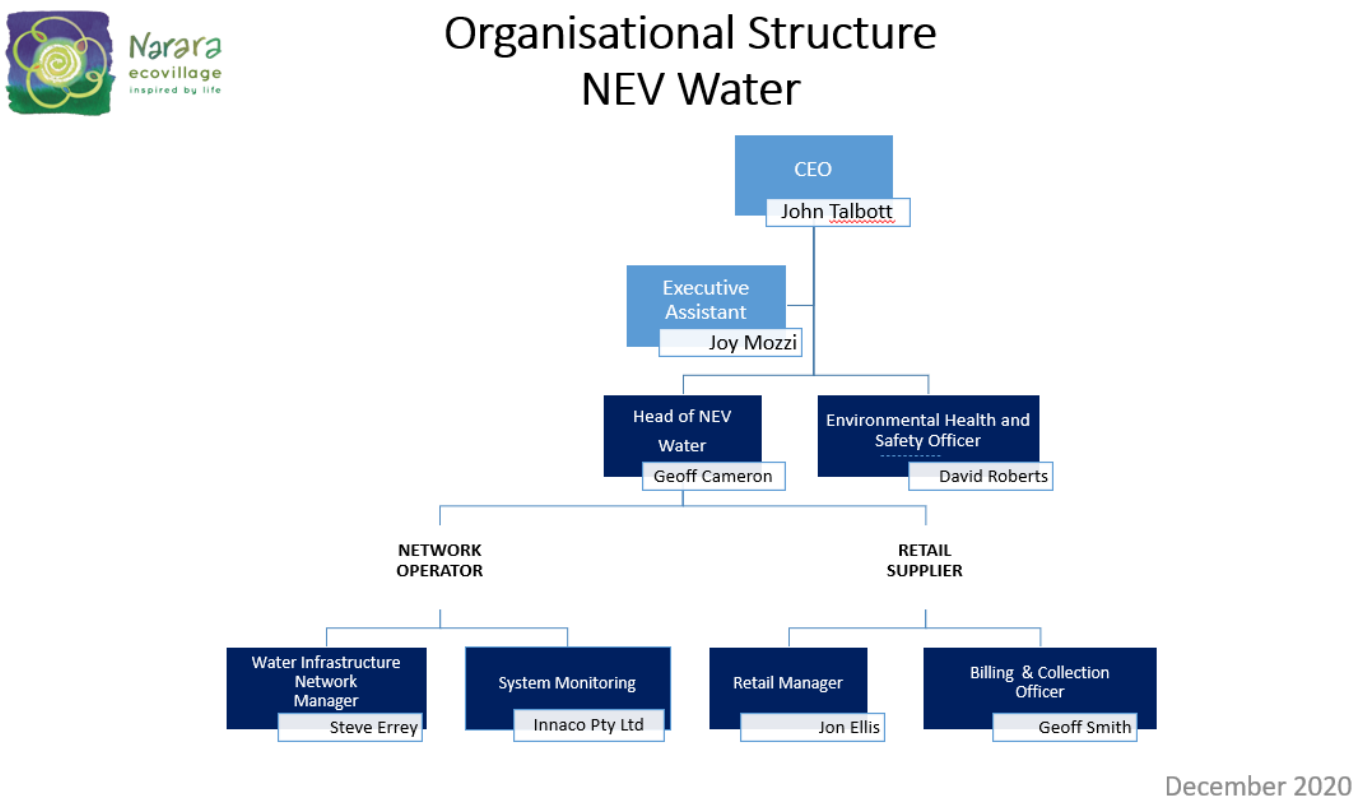
Domain

- Undertake operations and maintenance of potable water, non-potable water and sewerage networks
- Develop, implement and audit systems and procedures to ensure best practice approach to network management

Role Relationships

Internally

- Reports to Head of NEV Water
- Liaises with Environment Health and Safety Officer
- Liaises with other managers (Reservoir and Catchment Manager, Dam Safety Manager) managers and executives on matters relating to the development and monitoring of business plans



Externally

Liaises with:

- Innaco Pty Ltd regarding potable and non-potable water delivery from plants and monitoring in buffer tanks and reservoirs
- Central Coast Council regarding potable water supply and sewer connection
- Statutory authorities
- Customers
- Subcontractors

Key Accountabilities

Position-Related

Accountability	% of Position	Measurement Criteria
1. Network operation and maintenance	70%	• Number of unplanned interruptions • Network up-time • Asset maintenance activities completed on schedule • Customer satisfaction score • Mean time to resolve network issue • Cost reductions against budget
2. Ongoing review and update of metrics and documentation	20%	• Documentation updated per IOP schedule
3. Procedures, analysis, reporting	10%	• % reports delivered on time • Timesheets forwarded within 1 working day of end of week • Expenses forwarded within 3 working days of close of month

Reporting Requirements

- Monthly reporting of key indicators for each network to internal stakeholders
- Preparation for and co-operation with operational audits by IPART-accredited auditors
- Personal timesheets and expenses

Perfect Performance

Autonomous achievement of the following:

- All networks operational
- All maintenance activities up to date
- All reporting to stakeholders up to date
- All interruptions to services are planned interruptions rather than breakdowns

Actions Requiring Approval

- All expense items
- All capital expenditure related to the water infrastructure network
- Any proposal for works to be completed

Specific Responsibilities

- Establish and maintain an Asset Management Plan for the NEV network, which identifies a detailed program of maintenance and operation for the site
- Identify environmental risks associated with network operation and maintenance and implement mitigation strategies
- Implement connection procedures for new connections to network from users. Ensure users are informed of their obligations when connecting to the network, and their ongoing obligations. Record and document connection details as per procedures to be established
- Conduct network audits and easement inspections

- Compile, review and report on metering and network monitoring data
- Provide and facilitate stakeholder meetings regarding networks, as appropriate
- Undertake routine maintenance, where skills and available equipment permit
- Identify and coordinate specialist third parties who are required to complete the remaining operations and maintenance tasks
- Coordinate all planned interruptions to network supply to ensure risk assessments are completed prior to any work being undertaken
- Coordinate emergency and incident responses when there is a disruption to network operations
- Report monthly to stakeholders on network performance
- Lead and participate in risk assessments related to water infrastructure and identify risk mitigation controls which will minimise risk to the networks
- Liaise internally to ensure that network management is included as part of a holistic solution to the provision of water treatment infrastructure
- Prepare annual budget for maintenance of networks in line with the Asset Management Plan
- Coordinate retail supplier activities such as invoicing and reporting
- Liaise with treatment Plant Managers, Reservoir and Catchment Manager and other relevant stakeholders to optimise performance of the Water Infrastructure as a whole

Supervisory Responsibilities

This position has no direct reports.

Organisational Responsibilities

All workers and contractors have general organisational responsibilities. These include:

1. Understanding and complying with the spirit and content of NEV's *Code of Conduct*. A copy of the Code is provided at formal induction and is available on NEV's intranet under "Human Resources".
2. Fulfilling all work health and safety responsibilities as outlined in the *Work Health and Safety Policy*, which is provided to all workers at induction and available on NEV's intranet under "Site Management – Policies and Procedure".
3. Complying with NEV's Contractor Management System when engaging contractors.
4. Responsible and accountable for creating, registering and keeping records as required by the State Records Act 1998, abiding by the Information Management Policy and using the required systems and procedures.
5. Understanding and undertaking all work in accordance with relevant NEV policies and procedures.
   [Note: NEV's policies and procedures may be varied, changed or revoked by NEV at any time].

Background Knowledge Required for Position

Training and Education

Essential

- Bachelor Degree in Civil Engineering or equivalent field from a recognised university or Certificate IV Plumbing
- Relevant experience in water infrastructure network management
- White Card (Work Health Safety Construction Induction, NSW) or a willingness to obtain this card before commencement

Desirable

- Chartered Membership of the Institution of Engineers, Australia (or experience such as to be eligible for registration at this level)
- Membership of an appropriate water industry professional body
- Possession of a current “C” Class Driver’s Licence

Skills and Knowledge

General

- High level of written and verbal communication skills and interpersonal and negotiation skills, enabling liaison with all levels of government, business, community and Council
- Ability to work independently and as a team member
- Excellent organisational skills
- Awareness of and commitment to the principles of Work Health and Safety (WHS) and a commitment to attend relevant training
- Awareness of and commitment to the principles of Equal Employment Opportunity (EEO)

Specific

- Knowledge of and experience with issues relating to the management of water and wastewater systems and relevant environmental requirements in the operation and maintenance of water and waste water infrastructure networks
- Knowledge of and experience in computer software, programs, policies and activities and the ability to employ systems relevant to the role being undertaken
- Excellent customer service skills with the ability to provide accurate and timely advice in a helpful and supportive manner
- Ability to ensure all work is performed to meet health, safety and environmental requirements and responsibilities. This includes complying with all workplace instructions and procedures, using protective equipment provided and not placing any person’s safety at risk

Experience

- Operational experience in the water industry
- Operational expertise in water and sewerage operations and maintenance, including work planning, engineering, scheduling, dispatch and reporting functions
- Experience in driving efficiencies through work processes

Special Requirements

Participation in after-hours work may arise in order to ensure operational consistency.

Position Description
Environment Health and Safety Officer

Position: Environment Health and Safety Officer

Location: Narara Ecovillage Ltd. 25 Research Road, Narara NSW 2250

Job Type: Full-time or part-time; contract position

Reports to: Chief Executive Officer, Narara Ecovillage Co-operative Limited

Context

Narara Ecovillage Co-operative Limited (NEV) is creating a socially, environmentally and economically sustainable community. NEV recognises that risk is dynamic and inherent in a number of its activities, it takes this aspect seriously and makes every effort to minimise and mitigate against all forms of risk. The Board of NEV determines and oversees policy and risk management.

NEV plans to produce and treat water, as well as energy, on site for household use, irrigation and possibly for small commercial applications. This aspect is critical to the success of the village and the quality of life of NEV residents and visitors. NEV aims to be self-sufficient in providing water and energy and aims be a leader for sustainability water and energy management for a community.

The health and safety of the community, environment, and physical assets is critical to achieving this intent. As such this role is pivotal in providing the policies, compliance, education and reporting for health and safety.

Aim

The aim of the Environment Health and Safety Officer role is to ensure that all aspects of the activities within the Project and community are conducted in a healthy and safe way. This includes the health of the broader environment, the land, the community, its visitors and volunteers.

Abbreviations

CEO	Chief Executive Officer
NEV	Narara Ecovillage Co-operative Limited
NRM	Natural Resource Management

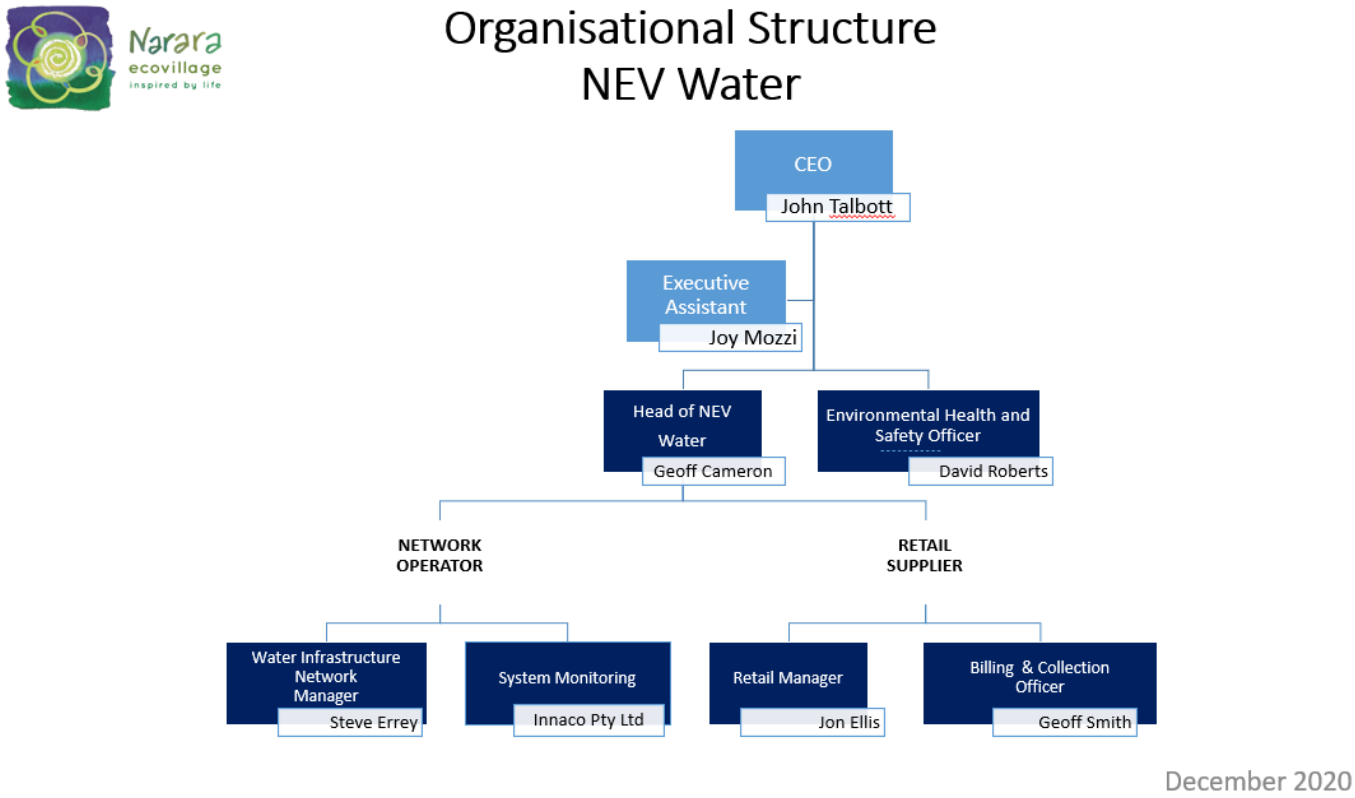
Domain

- Environmental Health and Safety
- Work Health and Safety
- Dam and Flood
- Water Management
- Fire Management
- Conservation Management
- Vegetation Management
- Energy Management
- Poisons and Contamination
- Emergency

Role Relationships

Internally

- Reports to CEO
- Liaises with Dam Safety Manager, Reservoir and Catchment Manager and Water Infrastructure Network Manager
- Provides information and/or recommendations to all levels of NEV regarding environmental health and safety



Externally

1. Statutory authorities
2. Nominated third parties
3. Customers
4. Principal consultants
5. Contractors
6. Sub-contractors

Key Accountabilities

Position-Related

Accountability	% of Position	Measurement Criteria
1. Analysis and monitoring of NEV's environmental performance 2. Regulatory approvals and compliance of Narara Ecovillage (NEV) Plants 3. Develop procedures to ensure best practice approach to environmental management	70%	Reporting requirements • Monthly reporting of key environmental indicators • Statutory reporting, as applicable Autonomous achievement of the following: • All statutory reporting submitted on time • All customer reporting submitted on time • All plant monitoring programs completed on time and up to date • All licenses and approvals for plants up to date
4. Routine reporting to clients and stakeholders	10%	
5. Audit preparation and facilitation	10%	
6. Education and Communication	10%	• Providing information and updates to the community around Environmental Health & Safety. Ensuring everyone is aware and informed to prevent issues occurring. Provide training where necessary

Specific Responsibilities

- Be the organisation's expert in best practice management of relevant legislation surrounding recycled and potable water around Australia and internationally
- Identify relevant current and new legislation and ensure relevant actions are taken to ensure compliance
- Maintain and ensure compliance with NEV's Draft Environmental Management Procedure
- Prepare Environmental Management Plans that cover all phases of NEV plants including construction, operation and maintenance
- Preparation of approval submissions and management plans
- Ensure all licenses and approvals are up-to-date and renewed in a timely manner
- Preparation of verification and validation testing programs for new plants
- Collate weekly and monthly and other periodic reports
- Analyse and manage parameter data for operational plants
- Graph and report data, and prepare performance summaries of plants as required by the contracts

- Management of water monitoring programs for all plants to ensure all samples are taken and reported as required by legislation and customer contracts
- Management of water quality testing vendor
- Audit plant maintenance records
- Prepare non-compliance reports and liaise with relevant authorities when a non-compliance is detected
- Facilitate regulatory audits with relevant authorities
- Assist with presentations to customers regarding legislative compliance
- Ensure responsibilities are assessed and continual improvement is implemented

Supervisory Responsibilities

- This position has no direct reports.

Organisational

All workers and contractors have general organisational responsibilities. These include:

1. Understanding and complying with the spirit and content of NEV's *Code of Conduct*. A copy of the Code is provided at formal induction and is available on NEV's intranet under "Human Resources".
2. Fulfilling all work health and safety responsibilities as outlined in the *Work Health and Safety Policy*, which is provided to all workers at induction and available on NEV's intranet under "Site Management – Policies and Procedure".
3. Complying with NEV's Contractor Management System when engaging contractors.
4. Responsible and accountable for creating, registering and keeping records as required by the State Records Act 1998, abiding by the Information Management Policy and using the required systems and procedures.
5. Understanding and undertaking all work in accordance with relevant NEV policies and procedures.
   [Note: NEV's policies and procedures may be varied, changed or revoked by NEV at any time].

Background Knowledge Required for Position

Beneficial to have worked on a project developing and managing resources, working with community and engaging stakeholders.

Training and Education

Essential

- Minimum degree level qualification in Environmental Science/Engineering, Natural Resource Management (NRM) or equivalent

Desirable

- Current Class 'C' Driver's Licence
- Member of the Sustainable Engineering Society of Australia

Skills and Knowledge

General

- Strong capacity or sound experience in the development of strategies, policies and programs related to the environmental field of work.

- High level of written and verbal communication skills and interpersonal and negotiation skills, enabling liaison with all levels of government, business, community and Council.
- Ability to work independently and as a team member
- Excellent organisational skills
- Knowledge or experience in ISO Standards for Environment, Health Protection and/ or Safety
- Awareness of and commitment to the principles of Work Health and Safety (WHS) and a commitment to attend relevant training.
- Awareness of and commitment to the principles of Equal Employment Opportunity (EEO).

Specific

- Proven abilities in managing environmental water programs and large scale projects
- Working with communities and partners to create long term NRM outcomes
- Ability to negotiate and consult with diverse stakeholders to achieve positive outcomes

Experience

Extensive experience in the successful delivery of complex natural resource management projects and/or programs, specifically related to environmental water.

Special Requirements

None.

Position Description
Risk and Audit Committee Lead

Position: Risk and Audit Committee Lead

Location: 25 Research Road, Narara NSW 2250

Reports to: Board of Narara Ecovillage Co-operative Limited

Context

Narara Ecovillage Co-operative Limited (NEV) is a member-funded organisation creating a socially, environmentally and economically sustainable community by developing up to 150 homes on its land at Narara, NSW.

NEV is the developer responsible to its members for the Project which entails funding, planning, design, construction and operations of over $10m of infrastructure comprising amenities, roads, drainage, power, lighting, communications, wastewater, potable and recycled water, in its various stages.

Besides infrastructure, NEV plans to manage all aspects of the new community in an open, transparent and sustainable way so that its members are aware of how their funds are being allocated, the costs and benefits of various investment options and are involved in major decision making whilst understanding the risks in such a development and the way they are being managed.

As the WICA license holder, NEV will be responsible for the design, construction, commissioning, operation and maintenance of all potable, non-potable and sewerage infrastructure distribution networks from source up to the customer connection points in accordance with the Water Services Association of Australia (WSAA) guidelines.

NEV plans to produce and treat water on site for the use of households and for possible small commercial applications. This aspect is critical to the success of the village and the quality of life of all those living and visiting NEV. NEV aims to be self-sufficient in providing water and be a leader in water management for a community.

Aim

The Risk and Audit Committee has been established to assist the Board to meet its responsibilities of good governance and provide oversight of NEV's financial management and control systems.

The Lead role will coordinate the activities of the Risk and Audit Committee to ensure effective internal and external audit functions and risk management systems. All aspects of the activities within the Project and community are to be conducted in a way that identifies the various risks and implements appropriate strategies to manage them. This includes risk to the NEV Co-operative, the community, contractors, visitors and volunteers including environmental, safety, operational, financial and social risk.

The Risk and Audit Committee will advise the NEV Board on the management of risks to the viability or sustainability of the Co-operative.

It will also appoint and manage the external Auditor of the annual financial statements and initiate any additional audits or reviews as identified by the Committee or the Board.

Abbreviations

CEO	Chief Executive Officer
IIA	Institute of Internal Auditors
NEV	Narara Ecovillage Co-operative Limited

Domain

The Risk and Audit Committee Lead is responsible for planning and implementing operational, environmental, financial and compliance related audits/reviews of NEV. A secondary role is to provide advice to the NEV Board, including financial controls, risk review and management.

The Risk and Audit Committee is responsible for reviewing the risk to the organisation, its employees, customers, reputation, assets and interests of stakeholders. The work of the committee covers a number of areas including:

- enterprise risk
- corporate governance
- regulatory and operational risk
- business continuity
- information and security risk
- technology risk
- market and credit risk
- environmental risk
- social risk
- financial risk
- work health and safety risk

Role Relationships

Internally

This committee reports to the NEV Board and will comprise a Chair and minimum of two Board members, at least one of which is non executive and preferably one is independent of NEV.

The NEV Financial Controller would normally attend meetings of this Committee.

The Risk and Audit Committee is granted by the Board unfettered access to all records and workings of NEV.

Externally

1. Statutory authorities
2. Regulatory bodies

Key Accountabilities

Position-Related

Accountability	% of Position	Measurement Criteria
1. Risk & Audit Committee meets regularly to monitor, assess and report on various organisational risks and compliance requirements in order to ensure good governance of NEV	40%	• Committee holds a minimum of 10 annual meetings. • The Lead is present for 80% of all committee meetings.
2. NEV complies with statutory authorities and regulatory bodies.	20%	• A compliance register is kept up to date monthly and made available to NEV. • Any items not completed by the required due date or in a timely fashion are to be highlighted and communicated to the NEV board in a transparent fashion including the action plan to rectify.
3. Potential risks are foreseen, documented and mitigated to the extent they can be.	20%	• A risk register is kept up to date and regularly reviewed at the RAC (3 times per annum unless a greater frequency is required) and at the Board (1 time per annum unless a greater frequency is required)
4. NEV Board members and workers understand their role in identifying, avoiding, mitigating and reporting on risk.	10%	• 90% of Board members and workers are provided workplace health and safety training and are given access and trained in the completion of an incident report.
5. Reviews and internal audits are conducted in the areas of identified high risk on a regular basis	10%	• Minimum of one internal audit or risk area review is conducted per annum into an area identified as high risk on the risk register. • The internal audit or review output includes a report to the board and an actions list to improve risk management.

Supervisory Responsibilities

The Risk and Audit Committee Lead is responsible for managing the operations of the committee and chairing committee meetings.

Organisational

All employees and contractors have general organisational responsibilities. This includes understanding and undertaking all work in accordance with relevant NEV policies and procedures.

Background Knowledge Required for Position

Training and Education

Essential

- A post-secondary degree preferably in business or finance

Desirable

- Internal or External Auditor experience
- CAANZ/CPA/IPA or PMIIA designation, or senior level status, is highly desirable
- Experience with Xero software

Skills and Knowledge

General

- High level written and verbal communication skills and interpersonal and negotiation skills, enabling liaison with all levels of government, business and the NEV community.
- Ability to work with all levels in the organization, while still being able to work independently when needed.
- Excellent organisational skills.
- Awareness of and commitment to the principles of Work Health and Safety (WHS) and a commitment to attend relevant training.
- Awareness of and commitment to the principles of Equal Employment Opportunity (EEO).

Specific

- Ability to appoint and supervise auditors on projects
- to follow sound internal control practices and to manage risks appropriately
- Ability to manage projects and
- Results-oriented – Be adaptable and able to meet deadlines, juggle multiple demands and to work with all types of personalities and individuals of various financial skill levels including Board members
- Strong skills in negotiating, relationship building, and. problem solving
- Detail oriented but able to quickly grasp the big picture

Experience

Excellent knowledge of financial management and risk-based auditing attained through many years of experience in a range of businesses with a focus on financial risk and regulatory requirements.

Special Requirements

Understanding of leading corporate governance practice and the standards of the Institute of Internal Auditors (IIA).

INNACO

Track Record

May 2021

About INNACO

Innaco and its partners have an extensive and proven track record and are devoted to deliver ongoing high-quality services to client in regard to the operation and maintenance of the site. Innaco, with our parent company Henry & Hymas, has over 80 experienced engineers and professionals practising in water, civil and structural engineering and has worked on numerous water and wastewater treatment plants and water recycling projects.

Innaco has a long track record of successful operation and maintenance management of water treatment plants and utilities around NSW and ACT. Innaco not only has long service contracts for operating and maintaining most of the plants they built, but also rectified and service many plants that have not been built by Innaco.

Effective operational management is performed by technically qualified and experienced personnel under local standards and regulations, assuring health and safety of their employees. A multidisciplinary back-office team supports O&M site teams and provides technological solutions for changing and unexpected conditions and requirements.

Innaco offer full turn-key solutions of water and wastewater treatment and recycling with focus on operation and maintenance service. We have a wealth of experience both in the design, construction and operation and maintenance of treatment plants. We consider our services to be unique to the client having all required design, automation, process, electrical, mechanical and operation and maintenance expertise in-house. Innaco has 15 full time operations staff that can cater to any water, wastewater or other water quality request.

Today, Innaco and H&H water group including our sister company Optimal Stormwater (owned by H&H) are providing ongoing operation & maintenance engineering service, and operation management and optimisation consultancy to 122 decentralised environmental system all around NSW and ACT (refer to table 1 – active project list).

Figure 1 Photos from INNACO Sites

Table 1 Active Operation and Maintenance Projects List

no.	Client	Number of Schemes
1	Ku-ring-gai Council	3
2	Georges River Council	2
3	Mirvac	2
4	City of Sydney	23
5	Blacktown Council	8
6	Mosman Council	2
7	Nth Sydney Council	6
8	Bankstown Council	5
9	Ryde Council	4
10	ACT Government	16
11	Parramatta Council	18
12	Randwick Council	18
13	Narara Eco Village	2
14	River Group - Ginninderry	1
15	BGIS	4
16	UTS	1
17	Veolia	1
18	Concord Golf Course	1
19	Bega Valley	1
20	City of Knox	4
Total		**122**

We are proud to say that we are delivering superior service to not most of our clients but **100%** of our clients are satisfied from our performance and all of them can provide positive reference for the superior service that they are receiving. We achieved **99% compliance** with all of our tradewaste agreements and maximum recycled water delivery in our water recycling schemes.

Innaco is a certified BNG contractor, all of our operation team receive extensive safety training and holds state and national safety certificates (refer to key personnel training and qualifications in service delivery plan). By implementing comprehensive WHSE policies, trainings, and support we had ZERO WHS incidents over the last 10 years.

INNACO Process and Operation Engineering Team

Our process and operation engineering team are comprised of professional, experienced and motivated personnel, available 24/7, to provide professional services in the following fields:

- Process Engineering (water quality, equipment, optimisation studies)
- Operation and Maintenance (routine, preventive, reactive and predictive maintenance even over the weekends and public holidays)
- Electrical works (troubleshooting and rectifications on the switch boards, control panels, VSD controllers, pumps and instruments)
- Equipment Service (pumps, filters, aeration systems, reactors, UVs, dosing systems & instruments)
- Develop and maintain asset management systems
- Water chemistry analysis
- Process static and dynamic simulations
- Pilot test and bacteria farming
- Working with Hazardous Chemicals
- Auditing, design, construction, validation, commissioning, upgrade and optimisation of Water Treatment Schemes
- Assessment and Planning (operation, electrical, process, civil, equipment)
- Water Management Plans, Planning and Implementation of water management plans for Councils, Developers and Property Owners including on-site wastewater management plans
- Licensing and Environmental authority approvals including WICA licensing, EPA, Sydney Water, and the NSW Office of Water among others
- Remote monitoring
- Work in Confined Spaces
- Sampling and on-site water quality tests and result analysis

Our Operation, Maintenance and Optimisation Experience

Relevant Experience Summary

Innaco and the H&H Water Group have been working alongside numerous metropolitan councils in NSW to design, review, upgrade, automate, and restore their water and wastewater treatment infrastructures to operational status. We worked on a wide range of wastewater influents with different characteristics and different effluent quality requirements. This wide range experience provided our team invaluable callability and knowledge to deal with different scenarios and offer innovative solutions to our clients.

The list below describes more than 40 projects that we have been working on with a number of other Councils to achieve optimised outcomes for over 150 systems.

As part of the operational systems, we are successfully operating:

- More than 250 pumps, including + 400 l/s pump stations, large bore pumps, leachate and sewer mining pumps
- 8 biological reactors for leachate and sewage treatment
- More than 70 disinfection systems, including some of the largest units in NSW
- More than 80 filtration systems
- More than 50 chemical dosing units
- Numerous instruments such as level sensors, switches, pressure indicators and multiple control systems
- More than 50 SCADA systems

We have 15 process, chemical, mechanical and electrical engineers in our process and operations team. We have mechanical engineers and technicians only in our process and operation engineering section. We have internal IT support as well as guys that design and build HMI control panels. The core business of this section is operation and maintenance of water infrastructures and we developed a team that has the capacity for delivering routine, preventative and reactive maintenance requirements for all our projects in-house. We only outsource some civil works, vacuum tankers, and some drainage works to our construction section or our project delivery partners.

As mentioned, we are providing operation and maintenance services to many different clients and we are proud to say that 100% of our clients can be our referees if you wish.

Project NTGC Sewer and Leachate Treatment and Recycling Plant Design, Construction, Commissioning & Operations & Maintenance *(MLE Process)*

Client *Ku-Ring-Gai Council*

Location *North Turramurra Golf Course, North Turramurra*

Project Description

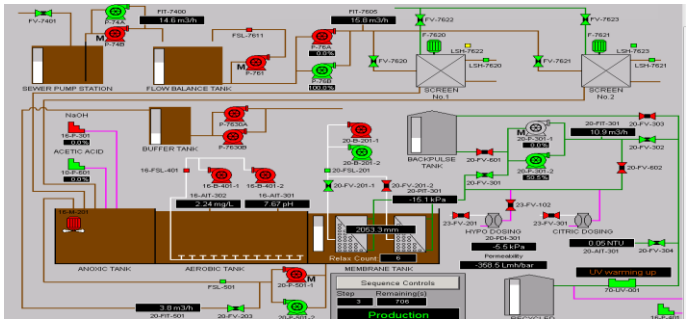
Sewage and landfill leachate are being pumped from a Sydney Water manhole approximately 800m away from the treatment plant in a valley with more than 100m elevation difference. The biological process is a MLE based with membranes and disinfection at the end of the process. As part of the project, Innaco has also constructed a substation to boost the electrical supply at the site. Solar panels have been installed on the roof of the treatment plant building

Total capacity of the plant is 300kL/day and it is treating sewage as well as leachate from the old landfill on site. The bioreactor was specifically designed to deal with high ammonia leachate mixed with raw sewage. Innaco has developed relationships with key stakeholders such as Sydney Water and the NSW Office of Water (previously Department of Water and Energy). Innaco along with Henry & Hymas has been involved with this project from feasibility stage and currently has a 15 year operation and maintenance contract on the project.

The recycled water plant is used to irrigate the golf course and the treatment plant has a capacity of 300kL/day.

Project Outcomes

Innaco team operate this system with no foaming, minimal chemical consumption, and all the tradewaste results are complying with Sydney Water limits. Innaco recently optimised the plant and increased its treatment capacity by 15%.



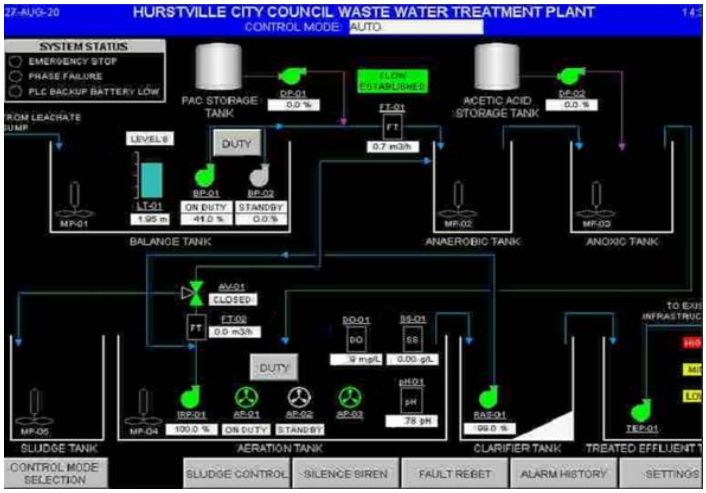
Project Leachate Treatment Plant Re-design, Optimisation, Commissioning and Operation & Maintenance *(MLE process)*

Client *Georges River Council*

Location *Hurstville Golf Course, Hurstville*

Project Description

In 2015 Innaco was awarded the operation and maintenance of the Hurstville Golf Course Leachate Treatment Plant. The leachate treatment plant had been installed a few years prior to enable discharge into a Sydney Water sewer under a tradewaste agreement. Due to numerous issues and the fact that the plant had not been commissioned properly, it had failed to meet tradewaste discharge standards. As such, Georges River Council (previously Hurstville Council) approached Innaco to look at make necessary rectifications and re-commission the plant to ensure that it was meeting tradewaste requirements. Innaco did a full bench test of the biological process and had the plant working within its discharge limits in 6 weeks after some modifications to aeration and adding tailored supplements to ensure the biological process was healthy. The treatment process is MLE and installed in a pedestrian walkway. It is important to Council that the system works with no foaming due health and environmental concerns.



Project Outcomes

We reduced the ammonia level to <1 mg/l, significantly reduced the amount of chemicals used, and has been operating the plant with zero foaming without dosing anti-foams. Innaco was later rewarded the operation and maintenance of the plant. To this date, there has been no breach of the tradewaste agreement since optimising the plant.

Innaco was recently awarded the operation and maintenance of the stormwater harvesting system and irrigation system associated with the Hurstville Golf Course as an addition to the maintenance contract for the leachate treatment plant

Project Wastewater Treatment and Recycling Design, Construction, Commissioning and Operation & Maintenance *(MLE process)*

Client *Ku-Ring-Gai Council*

Location *Gordon Golf Course, Gordon*

Project Description

Innaco was selected by Ku-ring-gai Council to design, construct, operate and maintain the 300kL/d sewer mining plant and storage facility as the water supply option for Gordon Golf Course.

Having design staff with construction experience, and operational experience of plumbing, electrical, chemical, process and control systems makes for much better designs and much more robust solutions.

The nitrifying reactor in Gordon is similar to Shellharbour and consists of an anoxic tank and aeration tank, with RAS pumps.

Major part of the power supply for the plant is coming from solar panels installed on the roof

Innaco has been operating the site since 2011 on a 15-year maintenance contract.

Project Outcomes

This plant was selected as the most sustainable decentralised sewer mining plant in its size by Sydney University in 2015. The cost of recycled water is $1.83/kL, which was the most cost-effective sewer mining plant in in NSW.

Innaco team operate this system with no foaming, minimal chemical consumption, and all the tradewaste results are complying with Sydney Water limits. Gordon Golf Course didn't use any potable water for irrigation over the past 6 years, which is the result of operating the system with zero downtime due to breakdowns.

Project: Maroubra Depot Truck Wash (*MLE Process*)

Client *Randwick Council*

Location *Maroubra Depot, Maroubra*

Project Description

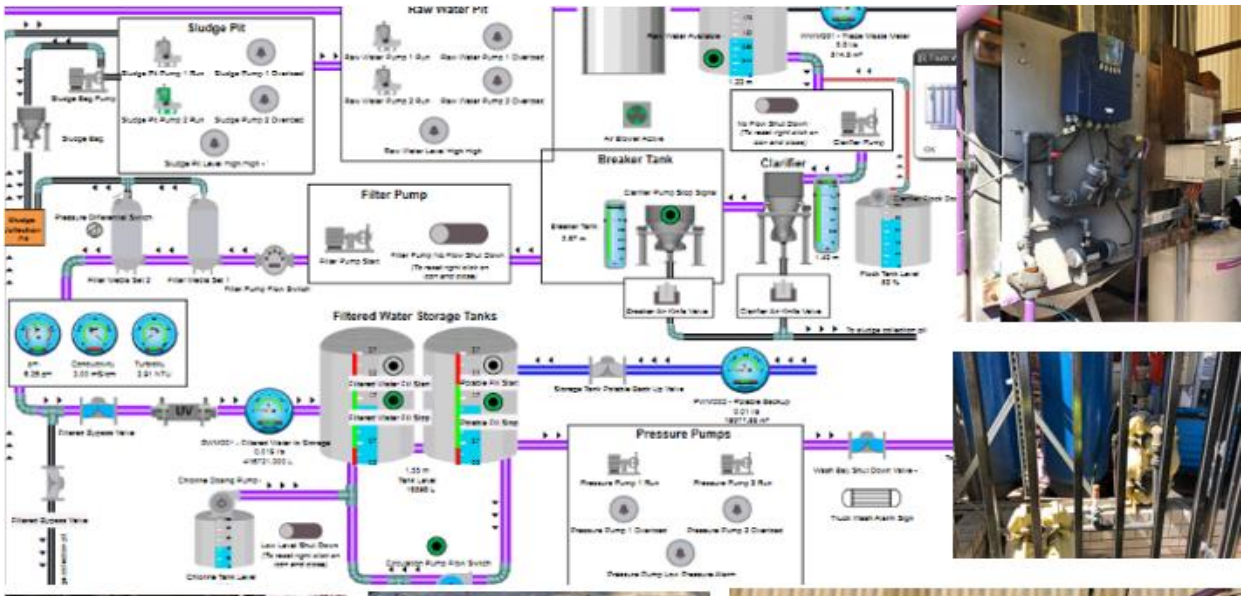
At Maroubra Depot, Innaco optimised and now maintain a wastewater treatment and recycling plant, which collects truckwash runoff from Council's garbage trucks. Council had issues for maintaining the tradewaste agreement considering high level of pollutants including ammonia, BOD, TSS and low pH from the runoff.

Innaco team optimised Councils system and worked together with Syntek Environmental (Lei) to apply modified bacteria to increase the bio-reactor capacity and also remove hair, oil and grease from the influent to the system.

Our team then worked on the MLE process to improve the settling in the clarifier and improved the feed to the filtration system and chemical dosing.

Project Outcomes

The results are stunning, this system now works with minimum discharge to sewer, all the tradewaste results over the past 3 years are complying, and potable usage for truckwash reduced by supplying maximum grade A recycled water.



Project 8 Chifley Square Blackwater Treatment Plant *(MLE Process)*

Client *Mirvac l*

Location *8 Chifley Square, Sydney*

Project Description

Innaco finalised the design, supply and installation of a 50kL/day recycled water plant for providing water for irrigation, cooling towers and toilet flushing in a new commercial building at 8 Chifley Square in Sydney. Innaco prepared the documentation under the Water Industry Competition Act (WICA) to enable operation of the scheme, full process, mechanical and electrical design, and the installation of all equipment in the treatment room. The plant has been installed as per May 2013 and final approval from the Minister for commercial operation was achieved in October 2014 following extensive validation and verification.

8 Chifley Square is a premium grade, sustainable commercial tower on a landmark Sydney CBD site. It will stand a height of 30 storeys, with an approximate net lettable area of 19,000 square metres. The colourful building has both a six-star Green Star and five-star ABGR rating, the highest level of certification available under both systems

The treatment is an MLE based process including ultrafiltration modules as well as reverse osmosis followed by disinfection using UV light and chlorine.

Project Outcomes

The technology assessment undertaken by a third party for the WICA license indicated that the proposed treatment is able to meet the high-risk exposure level for recycled water per the Australian Guidelines for Water Recycling and it has been endorsed by IPART under the Water Industry Competition Act. As part of the project, Innaco obtained the comprehensive operation and maintenance contract for the blackwater treatment plant as well as a comprehensive operation and maintenance contract for a rainwater harvesting system built by others at the site. Our operation and maintenance crew has ensured that the plant has met strict requirements under WICA at all times

Project St Ives Showground Leachate Treatment

Client *Ku-Ring-Gai Council*

Location *Gordon Golf Course, Gordon*

Project Description

A disused landfill tip in St Ives is being mined for irrigation water for use on the nearby showground. The disposal of the leachate was previously a significant cost to Kuring-Gai Council. With the new treatment plant (utilising a screen filter, sand/zeolite filtration, activated carbon and disinfection), Council is reusing up to 160kL/day of treated water supplying the nearby Showground (toilets and irrigation) and Nursery (irrigation). Backwash from the treatment plant is treated through a bioretention basin and a grass swale before being discharged back to the leachate pond.

Innaco has operated and maintained this particular plant for the last 10 years and has been involved in this project from feasibility stage (full turnkey solution). The treatment equipment was sourced from various treatment equipment suppliers to achieve the best outcome and to minimise operation and maintenance cost for the client.

Project Outcomes

The scheme has been working efficiently over the past 10 years, supplied millions of litres of reclaimed water, and provided considerable cost savings to Council. Innaco recently awarded the contract to operate the system for another 5 years.

The project received a **"Keep Australia Beautiful" award in 2011**

Project Leachate Treatment System Sydney Olympic Park – Single Leachate Management System

Client *Sydney Olympic Park Authority*

Location *Sydney Olympic Park*

Project Description

Innaco's team were engaged through parent company Henry & Hymas by Sydney Olympic Park Authority to undertake detailed design of a single leachate management system for the ten remediated landfill sites at Sydney Olympic Park. The leachate quality varies significantly between the different landfill sites and as such Henry & Hymas designed a single leachate management treatment system consisting of blending and monitoring of low strength and high strength leachate for disposal into sewer under a trade waste agreement. The system collects and transfers leachate in more than 5km of rising mains around the site to a central treatment system located near the P5 carpark. The system is fully automated and can discharge up to 160kL/day of leachate. On-line monitoring of trade waste parameters ensure that compliance is met at all times. Careful consideration had to be given to the location of the disposal due to the WRAMS recycled water system in place at Sydney Olympic Park. Furthermore, existing leachate treatment systems on-site were prioritised and utilised as much as possible for disposal before disposal

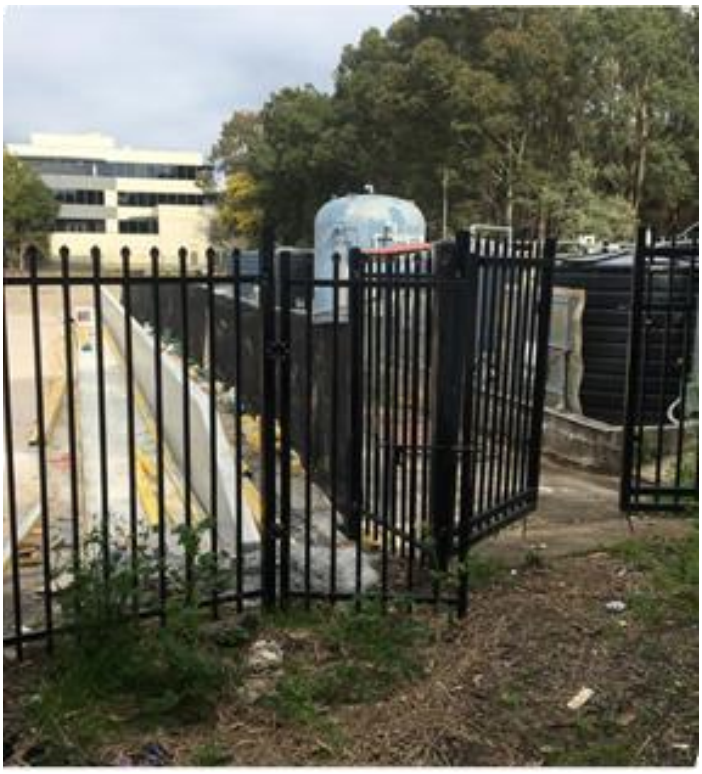
Project Outcomes

The project was constructed in 2020 and successfully commissioned. The system has met all the criteria and tradewaste requirements.

Project Leachate Treatment System Sydney Park

Client *City of Sydney*

Location *Euston Road, Sydney Park*



Project Description

Innaco's team were engaged through parent company Henry & Hymas by City of Sydney Council to develop options for short-term and long-term leachate management at Sydney Park. The existing leachate treatment plant on site has been costly to run without providing sufficient treatment to reduce key parameters for discharge of treated leachate to sewer. Henry & Hymas did an options analysis by reviewing historical water quality data and the current process and developed three separate options for consideration by the City. It was found that significant savings could be made by implementing a bypass strategy and optimising treatment in the future if required based on the continuous improvement in raw leachate quality on site.

Project Outcomes

The City has adopted one of the options investigated by Henry & Hymas and this has reduced the overall operation and maintenance cost significantly. In addition, Henry & Hymas has designed structural improvements to the current bunding on site.

Innaco is now assisting City of Sydney with the operation and maintenance and will fully takeover the project from July 2021.

Project Leachate Treatment Whytes Gully Landfill

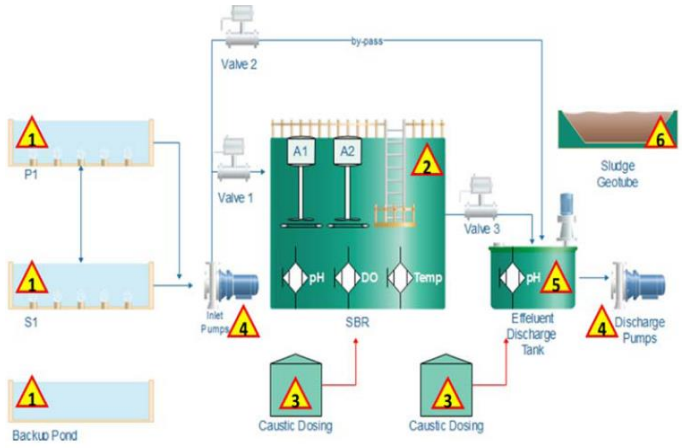
Client *Wollongong City Council*

Location *Wollongong*

Project Description

Innaco was engaged by Wollongong City Council to operate and maintain the leachate treatment system at Wollongong Waste Recovery Park (Whytes Gully Landfill site) for a period of 18 months (with extensions of 3 x 6 months). This system had considerable issues including multiple breaches with Sydney Water tradewaste agreement, excessive foaming, and limited discharge capacity 150 kl/day. The treatment plant consists of aerated leachate ponds followed by sequential biological reactors (SBR).

Innaco operated the leachate transfer equipment, the treatment process and sludge removal system on site and is constantly monitored the site to ensure that leachate volumes are maintained and disposed of accordingly.



Project Outcomes

This project was a resounding success. Innaco team address all of the operation issues which were inherited from previous contractor, and has successfully upgraded the plant to achieve a significant increase in the overall discharge capacity from 150 kl/day to 550 kl/day. Treated leachate quality improved considerably and we achieved more than 99% compliance with the tradewaste agreement. We exceeded contract KPIs in all the performance reviews, which were done by different contract and landfill managers over the course of operations. In 2020, there were changes in the landfill management and Innaco contract was finished. A local wastewater company took over the operation. Even though Innaco's contract was finished, but we provided training and operation support for four months after contract termination to ensure that the new contractor understands the modified process. We still have the formal and positive performance reviews and using the landfill and contract managers that we worked with as our references.

Project Leachate Treatment System Sydney Olympic Park – Wetland Treatment

Client *Sydney Olympic Park Authority*

Location *Sydney Olympic Park*

Project Description

Innaco's team were engaged through parent company Henry & Hymas by Sydney Olympic Park Authority to undertake the design of a leachate treatment wetland and associated civil works in partnership with Australian Wetlands Consulting (AWC) and Enviro Pacific Services (EPS) at Sydney Olympic Park. The existing stormwater detention ponds on the former golf driving range at Shirley Strickland Drive were found in a detailed design by AWC to be suitable for re-use as leachate treatment wetlands. The leachate treatment wetlands deliver treated water suitable for irrigation of the Former Golf Driving Range surrounds. Henry & Hymas partnered with AWC and EPS to deliver the design components of the design and construction project. Henry & Hymas delivered the civil, mechanical and process designs which included a bio-retention system, drainage redirection, vehicle access, tanks, pumps and rising mains, functional specification and structural slabs.

Project Outcomes

The project was constructed in 2018 and successfully commissioned.

Project Liquid Waste Receival Facility Icon Water

Client *Icon Water*

Location *Canberra, ACT*

Project Description

Innaco undertook the design of a liquid waste receival facility at the Lower Molongolo Water Quality Control Centre in Canberra, ACT. The liquid waste receival facility is removing solids from the liquid stream via a solids handling system containing munchers and screens and also operates via a swipe card system which is used by Icon Water to charge tankers for unloading waste. The facility is connected to the Water Quality Control Centre via an inlet connection. Innaco are undertaking full architectural, civil, structural, process, mechanical and electrical design for the facility including (but not limited to):

- Widening of existing access roads
- Facility slab and solids handling system
- Retaining walls
- Electrical control and process control
- Stormwater drainage
- Steel roof detailing
- Mechanical connections and controls
- Connection to a 2.1m diameter inlet pipe, 7m deep
- Turning circles for semi-trailers to be able to access the site
- Site security and lighting
- Rainwater tanks and reuse system
- Pumpstations
- Switchroom and amenities block
- Laboratory building
- Bulk earthworks

Project Outcomes

The project was constructed in 2017 and successfully commissioned.

Project Shellharbour Leachate Treatment Options Assessment

Client *Shellharbour Council*

Location *Dunmore Recycling and Waste Disposal Facility, Shellharbour*

Project Description

Innaco were engaged by Shellharbour Council to conduct a comprehensive study on the leachate treatment and disposal options for Shellharbour Council.

Innaco developed a detailed options assessment with cost benefit analysis and scoring method for different options including SBR, MLE+SBR, Reuse, and Treatment and Tankering.

Our team ran multiple bench tests on different cultures and multiple samples from fresh leachate. Innaco engineering team also ran a static simulation on different options.

After going through a detailed assessment process and, due to limitations for storage and mixing capacity on site, a MLE+ SBR process was specified for leachate treatment to reduce the ammonia level and proper mixing prior to treatment.

Our team also developed the design for the pipelines and pumpstation for discharging the treated leachate to Sydney Water sewer system.

Project Outcomes

Innaco options study was reviewed and assessed by multiple external consultants engaged by Council. The MLE+SBR process was selected and project is under construction now.

Project PFOS/PFAS Treatment Amberley Airforce

Client *BMT WBM*

Location *Amberley Airforce Base, Queensland*

Project Description

Innaco was engaged by BMT WBM to conduct a process analysis and options assessment for PFOS treatment at Amberley Airforce. Runoff from the plane wash section of the air force base was contaminated by PFOS from the washing foam. The air force base had an existing treatment facility for PFOS removal, but it was underperforming and was not capable of effectively removing PFOS due to design and operational issues, such as inefficient oil removal unit, unbalances chemical dosing, and poor GAC unit.

Innaco conducted a process analysis and options assessment on the treatment process and developed a comprehensive rectification plan for BMT to address the oil removal, and suspended solids by adding a DAF unit. This unit improves the feed to the GAC filter and makes the chemical dosing more effective against PFOS. For oxidising PFOS a mixture of rainwater recycling unit for dilution before oxidation was proposed to absorption of PFOS in the GAC.

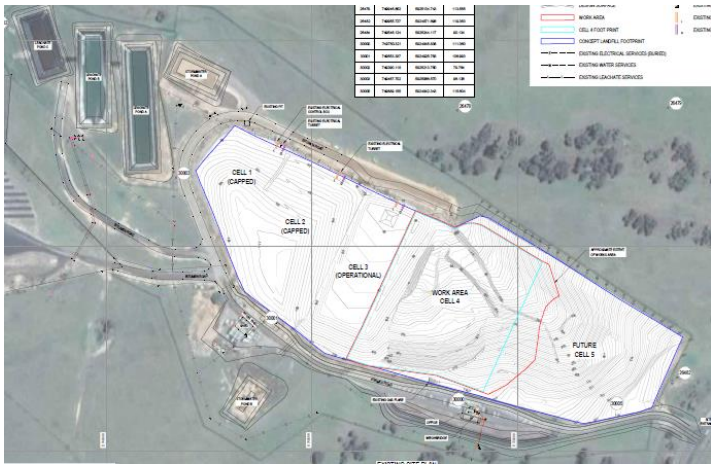
Project Outcomes

Innaco received a positive feedback from BMT on the options assessment report. The report and plans were used as part of a master plan project by Defence for addressing PFOS and wastewater quality improvements in the Defence basis.

Project Bega Valley Leachate Treatment Options Assessment

Client *Bega Valley Council*

Location *Bega Valley*



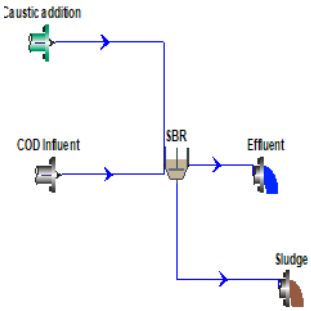
Project Description

Innaco were engaged by Bega Valley Council in April 2021 to conduct a comprehensive study on the leachate treatment and disposal options for Bega Valley Council.

Innaco developed a detailed options assessment with cost benefit analysis and scoring method for different options.

Our team ran multiple bench tests on different cultures and multiple samples from fresh leachate. Innaco engineering team also ran a static simulation on different options.

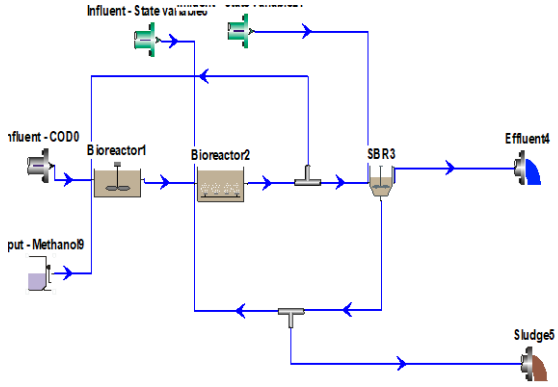
Considering the location of the site options such as leachate incineration and using wetlands for disposal are being assessed.



Element name	COD Influent
Flow	50
Total COD mgCOD/L	2450.00
Total Kjeldahl Nitrogen mgN/L	1450.00
Total P mgP/L	20.00
Nitrate N mgN/L	0
pH	8.00
Alkalinity mmol/L	59.00
ISS Influent mgISS/L	45.00
Calcium mg/L	80.00
Magnesium mg/L	15.00
Dissolved O2 mg/L	0

Project Outcomes

The project is still active and Innaco will submit the final assessment report for the best leachate management and disposal based on the detailed scoring method to Council in June 2021.



Water Recycling and Wastewater Treatment Infrastructure Operation, Maintenance and Optimisation for Randwick City Council (18 systems)

Project Description

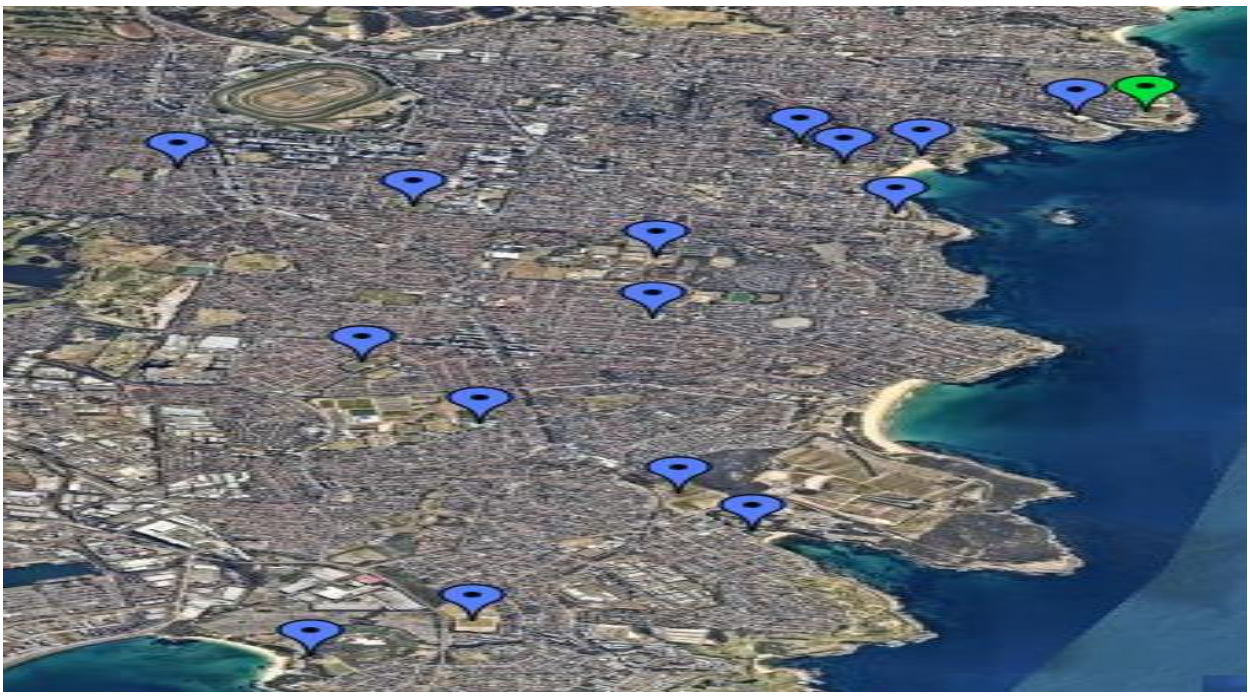
Operation, Maintenance, documentation, water quality monitoring, rectifications and optimisation of 18 water recycling, wastewater, and bore water treatment infrastructures for Randwick City Council. This project includes some of the largest water recycling and bore water supply systems in NSW such as Coogee Oval, Yarra Bay, and Chifley Reserve. Innaco team audited all of these schemes, developed asset management plans, water quality database and a rectification list with RCA method. Innaco process and operation engineering team is now providing ongoing operation and maintenance for these systems

- ✓ *Clovelly South, Clovelly Beach*
- ✓ *Burrows Park , Clovelly North*
- ✓ *Dunningham, Coogee*
- ✓ *Coogee Oval*
- ✓ *Grant Reserve, Coogee*
- ✓ *Des Renford Leisure Centre*
- ✓ *Bardon Park, Coogee*
- ✓ *Paine Reserve, Randwick*
- ✓ *RCC Community Centre, Randwick*
- ✓ *Council Plant Nursery, Kensington*
- ✓ *Depot WTP, 192 Storey Street, Maroubra*

Purcell Park

- ✓ *Pioneers Park , Malabar*
- ✓ *Cromwell Park, Malabar*
- ✓ *Nagle Park, Maroubra*
- ✓ *Chifley Reserve,*
- ✓ *Yarra Bay Bicentennial Park, Philip Bay*

Maroubra



Water Recycling

City of Randwick project includes more than 16 water recycling systems. These systems encompass offtake pump stations, GPTs, filtration, biological, disinfection and water quality monitoring stations. Most of these systems are centralised treatment and distribute the recycled water to a number of different enduse tanks. Innaco operates the systems from the catchment to the irrigation network.

Bore Water

There are four major bore water supply systems as part of this projects. Innaco team provides on going monitoring and operation and maintenance of these bore water supply systems.

Iron Removal

There are two systems at Randwick that have a high concentration of iron at their inlets. Innaco team operates an innovative iron removal system which works based on air oxidation and membrane without the need for chemical dosing. This system works very efficient and Pioneer and Paine Reserve systems supplied more than 90% of the irrigation demand

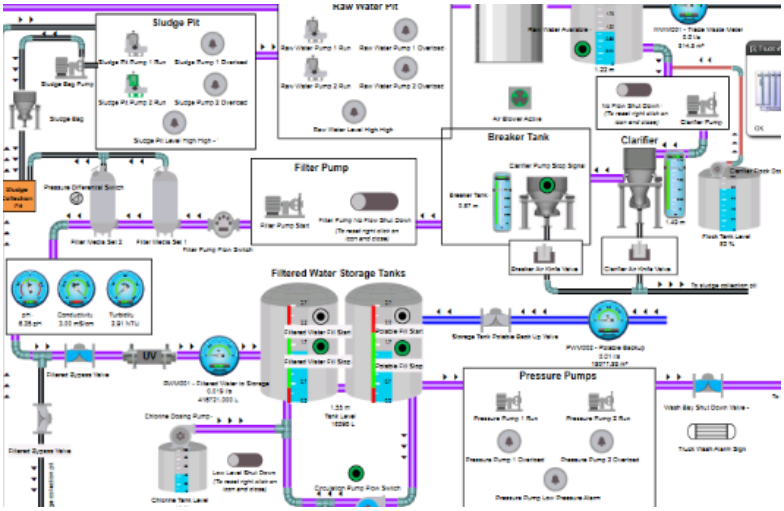
Remote Monitoring via CTS

All systems at Randwick Council are connected to CTS SCADA system. Innaco team provides ongoing remote monitoring and operation of all of these systems.

This is something that could apply to more sites in the future

Reporting

Innaco team provide comprehensive monthly reports in excel database format on the performance of the systems, water quality, efficiency, assets condition, maintenance schedules, and usage for all systems, and attend to monthly contract meetings for operation and optimisation planning.



Auditing and validation

As part of the operation and maintenance contract Innaco team were responsible to conduct a detailed asset auditing and database preparation. An automated database in excel format was submitted to Council, which covers all their assets information.

Project Outcomes

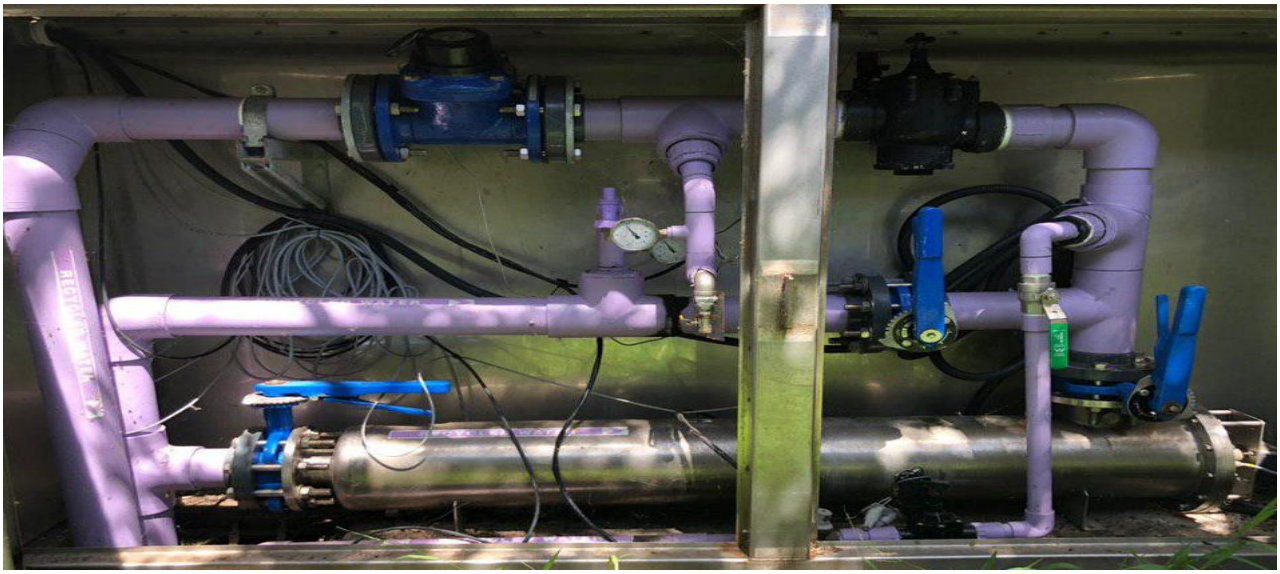
Systems performance, efficiency, water quality, recycled water volumes, and process documentation were optimised over the course of contract, and we are still Council's operator for these systems.

Water Recycling Infrastructure Audit, Automation Upgrades, Rectifications, and Operation and Maintenance for Paramatta City Council (18 systems)

Project Description

Innaco engaged through our sister company Optimal Stormwater to deliver the operation and maintenance contract for City of Parramata Council to operate and maintain their water recycling infrastructures. CoP has 18 water recycling plants. The Innaco team started with asset condition and performance assessment, then developed a detailed database, and water quality monitoring program. Now we are providing operation, maintenance, optimisation and automation upgrade works for Parramatta Council, and was successful in improving their asset performance by 100%.

- ✓ *Third Settlement Reserve*
- ✓ *Arthur Phillip Reserve*
- ✓ *Possum Patch Childcare Centre*
- ✓ *Rydalmere Park*
- ✓ *Cowells Lane Nursery*
- ✓ *Binnalong Park*
- ✓ *Boronia Park*
- ✓ *Boronia Park / Stormwater Re-use System*
- ✓ *Northmead Child Care Centre*
- ✓ *Rosella Park*
- ✓ *Council Rydalmere Operations Centre**
- ✓ *North Rocks Park*
- ✓ *Somerville Oval**
- ✓ *Doyle**
- ✓ *Ollie Webb Reserve*
- ✓ *Jubilee Hill Child Care Centre*



Operation and Maintenance

The City of Parramatta has 18 water recycling systems. Most of these systems are sophisticated systems and include rain gardens, multi stage filtrations, disinfection, and large storage tanks. The end-uses are irrigation, toilet flushing, and laundries, which requires grade-A recycled water quality with comprehensive CCPs.

Automation Upgrades

Parramatta Council engaged us to develop, install and commission a centralised SCADA system to monitor and operate their large schemes. Innaco team developed an Allen Bradley PC based SCADA system for Council and commissioned that for 50% of their large schemes. The rest of them will be connected to the centralised monitoring and control SCADA over the next financial year.

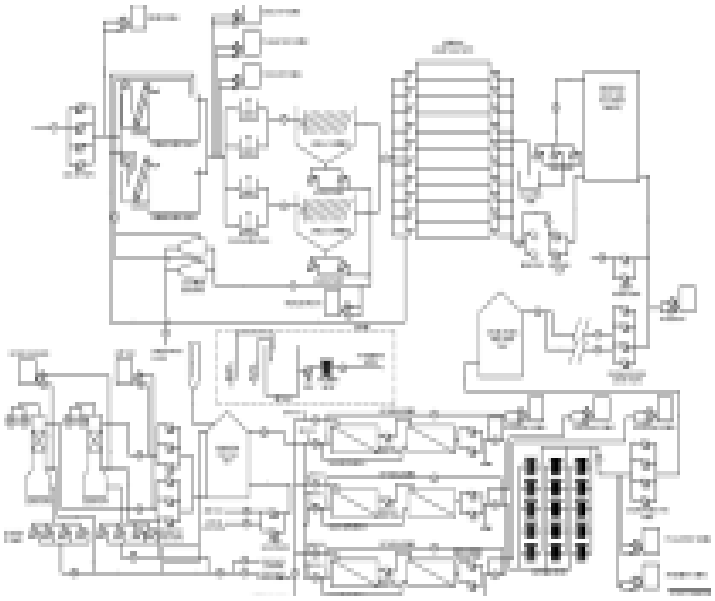
Project Outcomes

Systems performance, efficiency, water quality, recycled water volumes, process documentation, and automation system were optimised over the course of contract, and we are still Council's operator for their systems.

Project 128,000,000 litres a day Water Treatment Plant for Oil Extraction - Zubair Oil Field, Iraq

Client *Alsaraf*

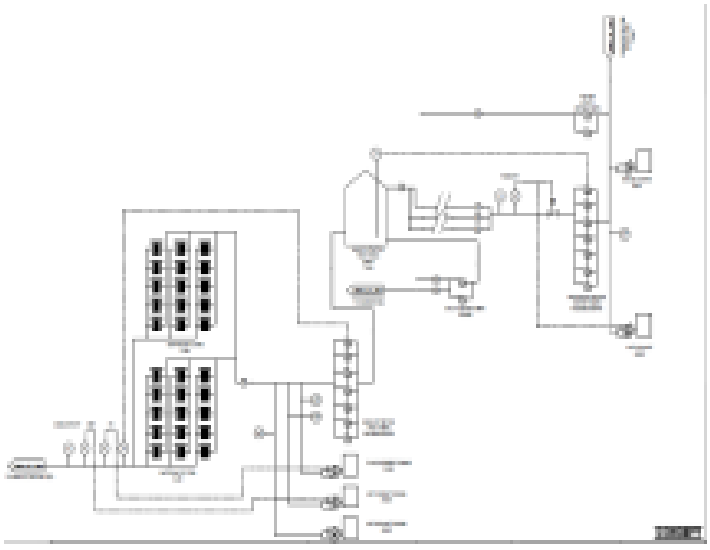
Location *Zubair Oil Field, Iraq*



Project Description

Henry & Hymas undertook concept designs including process flow diagrams and P&IDs for a large water treatment plant (128ML/day) in Iraq. The project included treating water from a river to a standard where it could be injected to the oil reserve to extract oil. It also included treating the return water to a standard where it could be discharged back into the river under strict environmental conditions. The project also included the concept design of transfer pipelines (DN600-DN675).

Treatment process was included, multi stage screening, settling tanks, clarifiers, microfiltration, nano-filtration, chemical dosing, and deaeration. Innaco did the concept, simulation process, mass balance, flow calculations, and 3000 l/s transfer pumpstation.



Project Outcomes

Project passed the comprehensive approval process by ENI in Italy, and Iraqi Minister of Petroleum and Minister of Environment, however, it was then went on hold because of the Covid in 2020. .

Project Reticulation Network Operation & Maintenance Consultation

Client *ACT Government*

Location *Canberra Inner North*

Project Description

Inner North Reticulation Network is the largest SWH scheme in the southern hemisphere. This system also includes a Managed Aquifer Recharge system and supplies recycled water to 18 end-user systems for irrigation

Innaco team is engaged in review, operation consultation and optimisation of the Inner North Reticulation Network. This includes reviewing the existing documents, drawing and design to sort relevant information to operation and validation. The development of the standard operating and procedure templates are followed by initial assessment and review and preparation of the O&M documents and ongoing task by operator. In this project the system performance has been reviewed against to National Water Quality Management Strategy and an Optimisation Plan has been prepared.

Also, Innaco team through optimal stormwater have prepared the P&IDs for entire harvesting system. And develop the functional description for the entire system & site specifics, including auto/manual condition description chart.

Project Outcomes

Operational review & water quality requirements have enabled a reliable and cost-effective long-term maintenance of the water harvesting scheme. ACT Government passed the regulator audit with the documents that were prepared by our team.

Project Technical Specification & Risk Assessment/ Process Validation on treatment system, End Users tanks sampling, water quality results analysis, condition assessment & SOP development

Client *ACT Government*

Location *Canberra*

Project Description

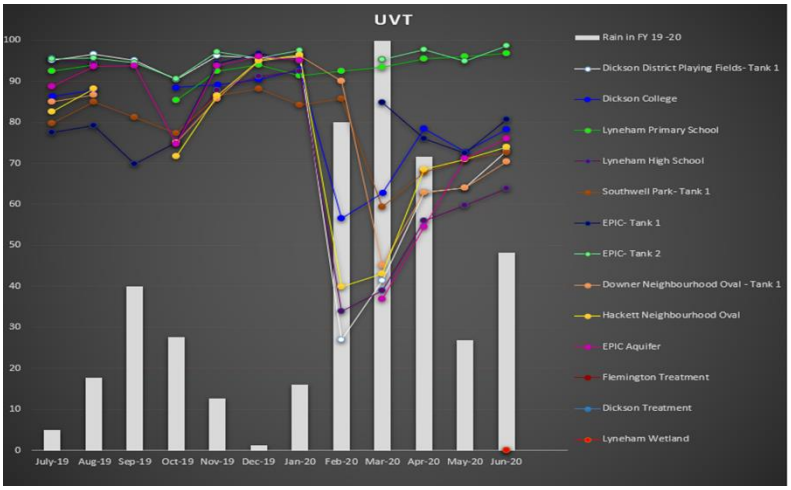
Innaco team were engaged to undertake consultancy services associated with the preparation of technical specification document for the INRN system. This constitute a comprehensive review of information, Preparation of technical specifications.

Omid has undertaken a detailed risk assessment of the SWH scheme includes the treatment process, storage and the distribution system, Identify hazards, prioritise (i.e. assess) the risks of each hazard, control measures, and preparation of a detailed risk elimination plan in accordance with the National Guidelines.

As part of this project a comprehensive assessment has been implemented on the end user's tanks and develop Standard Operating Procedures and WQ monitoring plans for the end user tanks (added to WIOP).

Project Outcomes

The document that can be utilized in design development of these schemes such as a municipal infrastructure standard. Preparation of a risk map on the treatment and distribution system resulting in water quality assurance.



Project Operation and maintenance of Angus Creek Stormwater Harvesting scheme (one of the largest schemes in NSW 200 MLD)

Client *Blacktown City Council*

Location *Council PO Box 63 Blacktown NSW 2148*

Project Description

This system is one of the largest stormwater harvesting systems in NSW with a capacity of 120 – 200 ML per year. After successful commissioning and process validation of the system and submission of the final document, Innaco was engaged through Optimal for the long-term operation and maintenance of the system since 2017. We have successfully operated the system to supply recycled water to the irrigation tanks. And then we were engaged to provide a comprehensive assessment, operation and rectification of the system during the commissioning process.

An extensive water quality monitoring, instruments & equipment adjustment, calibration and servicing have been implemented, to ensure all the water quality results are meeting the stormwater recycling guidelines.

Project Outcomes

The treatment plant runs at its maximum capacity, and the equipment and instruments are serviced in a way to minimise breakdowns and optimise their life cycle. As a result, the irrigation now runs on just about all treated stormwater, and Innaco has just been engaged to run the scheme for another 5 years from 2020. When a company exceeds expectations, it makes sense to keep them going.

Project Stormwater Harvesting Audit, Rectifications, Operation and Maintenance

Client *North Sydney Council*

Location *North Sydney Stormwater & Rainwater Harvesting Upgrade Scheme*

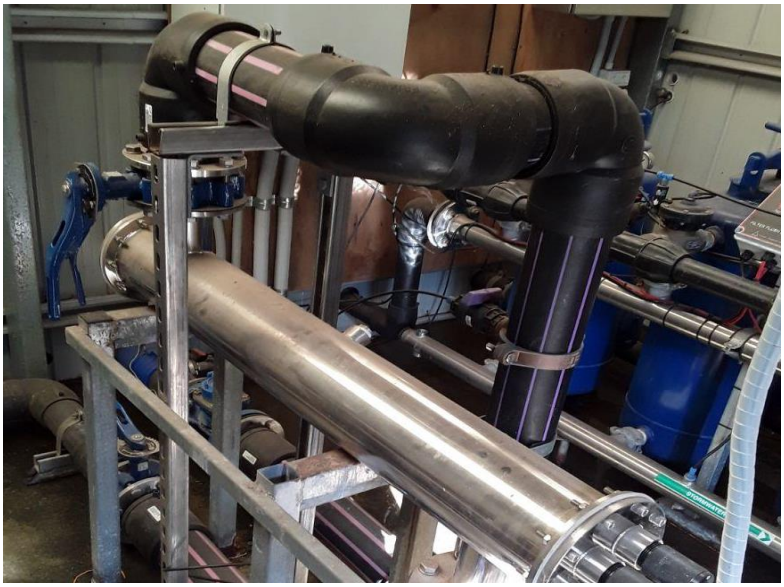
Project Description

Innaco was engaged to provide the North Sydney Stormwater and Rainwater Harvesting Upgrade which included an audit, water quality and water quantity investigations, recommendations, energy efficiency analysis, water balance model and expansion options, project optimisation and upgrade plan, risk assessment, report and presentation.

North Sydney Council had constructed a multi-million-dollar stormwater harvesting scheme which was not delivering the amounts and rates it was designed to. Innaco designed and installed the largest UV system on a SWH scheme in NSW for Nth Sydney.

Project Outcomes

Optimal Stormwater (Innaco sister company) was awarded the operation and maintenance contract of the system in 2018 and has been operating the system and delivering outcome since then. As part of our service, we are doing remote monitoring, preventative maintenance, reactive maintenance and water quality monitoring for the scheme which reliably supplies irrigation water for a Golf Course and 5 sporting ovals.



Project Water Infrastructure Operation & Maintenance – and algae control

Client *City of Ryde*

Location *Ryde LGA*

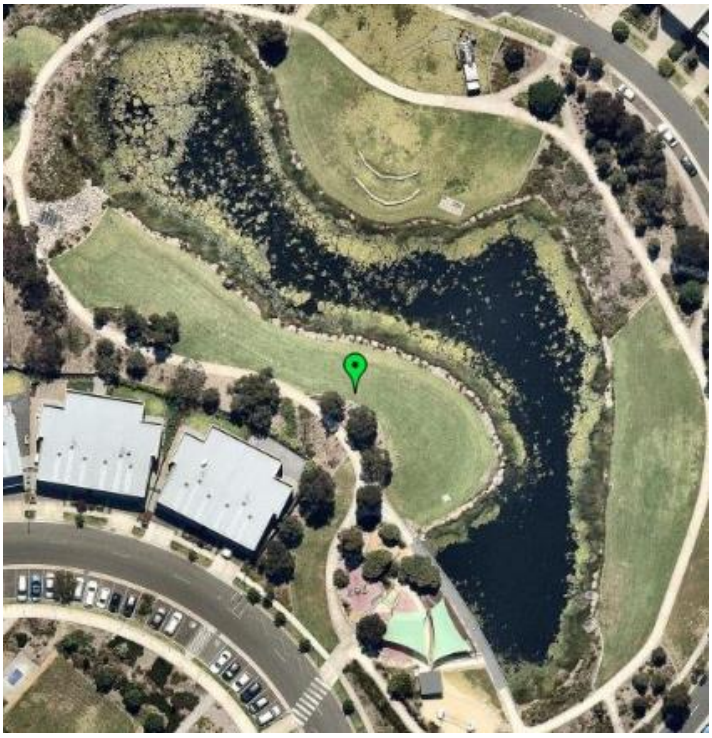
Project Description

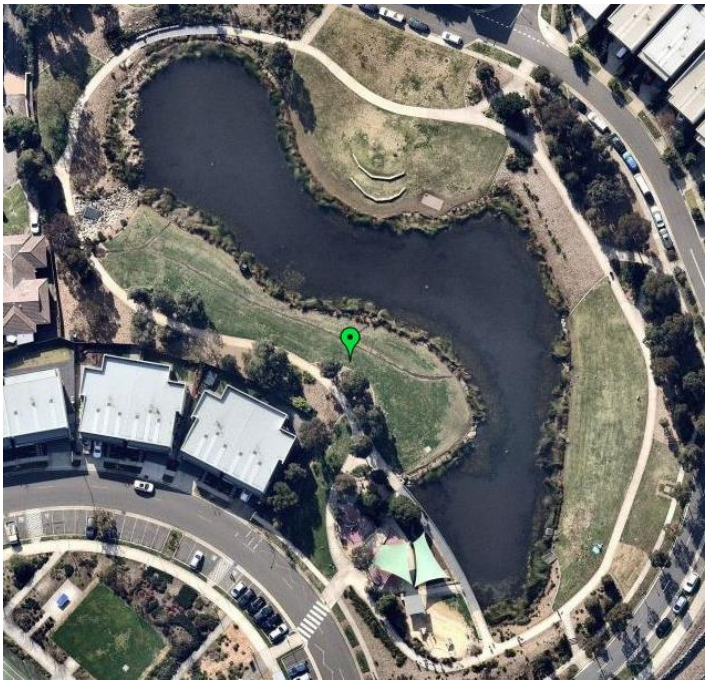
The City of Ryde has 3 large water recycling systems at Meadowbank Park, Ryde Park and Bill Mitchell Park. Innaco team were engaged through our sister company Optimal Stormwater to conduct an audit and asset condition and performance assessment. The comprehensive asset database and condition assessment lead to a large rectification project to address previous operational and design issues. Our team are now providing routine, preventative, reactive maintenance and water quality monitoring services to Council for Meadowbank Park, Ryde Park and Bill Mitchell Park.

Our team were additionally engaged by Council to address algae bloom issue at Council ponds. After addressing the issue with the pond now we are providing on going maintenance for the aeration system and routine chemical dosing. Seen opposite are the aerial image results before and after the operation and maintenance and rectifications took place

Project Outcomes

All the systems are now using a vast majority of recycled water after the audit, rectifications and optimum operation program.





Project Concord Golf Course 600 l/s pumpstation

Client ***Concord Golf Course***

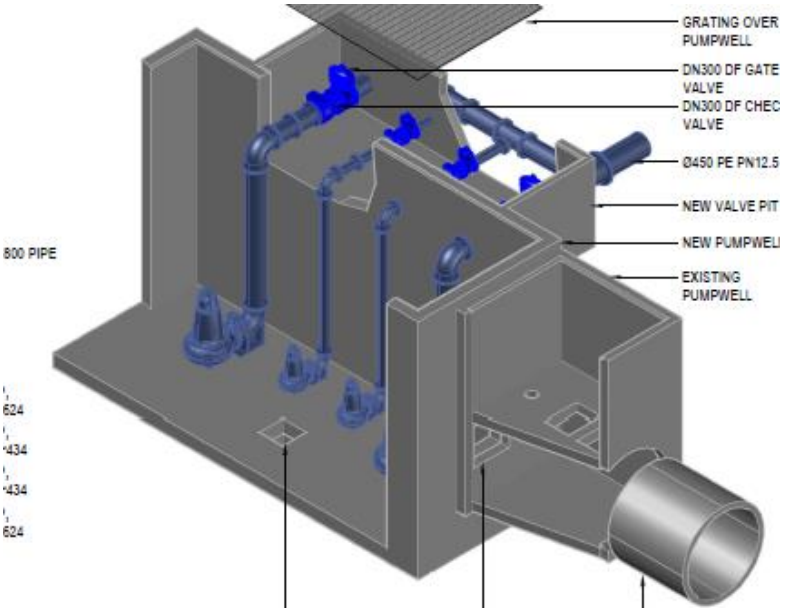
Location ***Concord Golf Course, Concord***

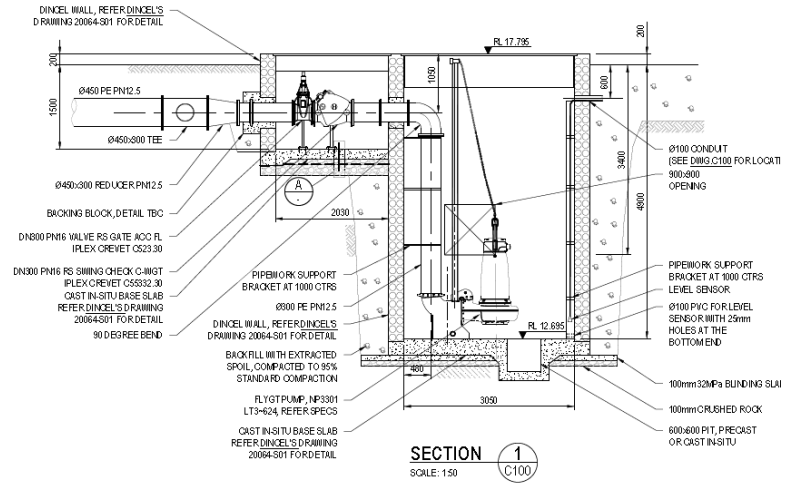
Project Description

The Concord Golf Course is undertaking upgrades and modifications to pumps/pit of a 30 year old stormwater harvesting system and a critical aspect of the proposal is the configuration of new pumps, size (depth, width and length) of the new pit and later on the installation of new GPTs.

Our team undertook the detailed design of the new stormwater harvesting system from process and instrumentation to civil, structural and hydraulic which also included the design of an innovative Dincel cast in situ structure.

The golf course is building these works in anticipation of a hot a dry summer. The next stage will see the pumps installed, process control commissioned, and then the CGC will work with Council on new GPT pre-treatment to protect the pumps.





Project Knox Council Automation, Programming, and Centralised Control of 4 Water Treatment Systems

Client ***Knox City Council***

Location ***Melbourne, Victoria***

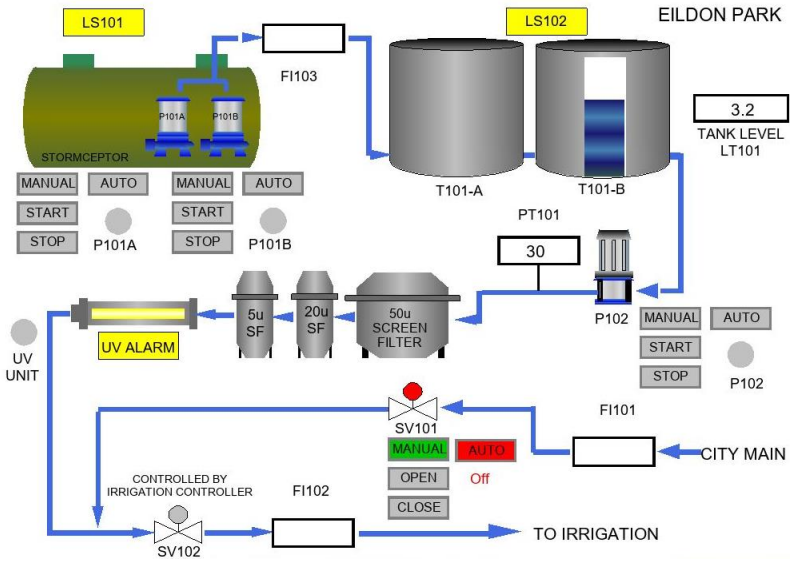
Project Description

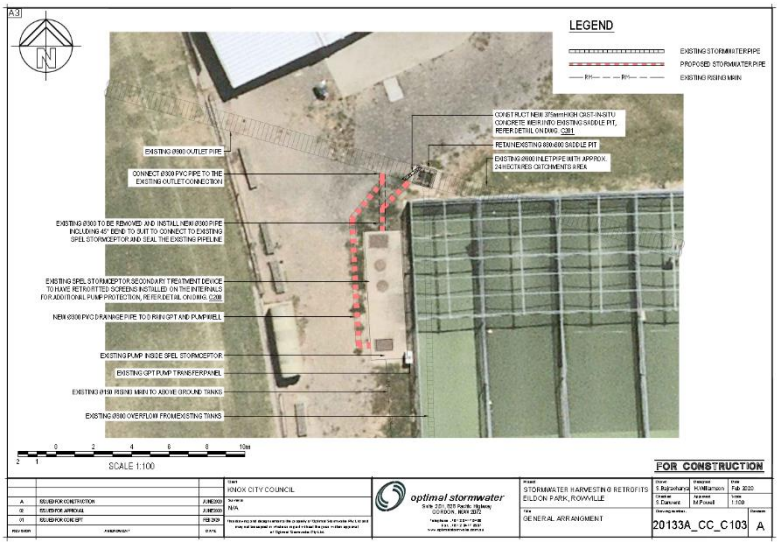
Council went out for tender for the automation, programming and rectification of 4 existing water treatment plants that were non-operational and our team won an alternative tender to redesign and undertake the required electrical, programming, automation, SCADA, civil, structural, hydraulic and process engineering to get the four systems up and running again.

Our team in Sydney worked with our Melbourne office team to deliver the project and address all the issues and install PLCs, HMI, and centralised control system for Council.

Project Outcomes

All the systems are now operational and not lny meeting nut exceeding Council's expectations. They are all now connected to a centralised monitoring and control system.





Project Des Renford Leisure Centre (DRLC)

Client *Randwick Council*

Location *Heffron Park, Maroubra*

Project Description

Innaco was engaged by Randwick Council to do the rehabilitation, operation and maintenance of two water treatment plants at the Des Renford Leisure Centre (DRLC). DRLC is an award-winning facility located in Sydney's Eastern Suburbs at Heffron Park in Maroubra. It is owned and operated by Randwick City Council and comprises of state-of-the-art gym, aerobics and pool facilities. With over 500,000 visitors per year DRLC has a large range of water and dry land activities. The scope of work included the rehabilitation, operation and maintenance of:

Backwash water treatment & recycling plant. Treated water is used for toilet flush and irrigation.

Bore water treatment plant. Treated water is used for pools water make-up.

Project Outcomes

Both systems were rectified and the operational issues were addressed by Innaco. The efficiency of the backwashing system increased by 60% and waste water discharge to sewer was minimized considerably.

Project Relining of Prospect Dry Beds

Client *Prospect Water Filtration Plant*

Location *Cowpasture Rd, Wetherill Park*

Project Description

INNACO undertook civil works in relation to the relining of Prospect Dry beds for the dewatering of sludge from the Prospect Water Filtration Plant. The works that Innaco undertook contained the following:

Excavate areas for remediation and Place the Geo net underneath the soft spots as per manufacturer's instructions.

Fill soft areas with soil from site and compact (beds 1, 2, 3 and 4) to achieve a minimum density ratio in the range of 95% to 98% of the standard maximum dry density

Backfill remediation area with excavated spoil and stockpiled spoil from site

Strip back existing layer of wearing course sandstone and stock pile

Proof roll subgrade (clay layer) with 7 tonne roller to achieve a minimum density ratio in the range of 90% to 95% of the standard maximum dry density

Undertake density testing

Import new material (sandstone) and build up to 100mm layer

Place geotextile markers every 5m over 100mm of ripped sandstone layer

Build sandstone layer up to 300mm

Proof roll sandstone layer

Provide work as executed survey and inspection and test plans

Project Outcomes

The system is now operational and meeting the client expectations.

Project Ginninderry Water Recycling and Runoff Management System

Client ***Riverview Group***

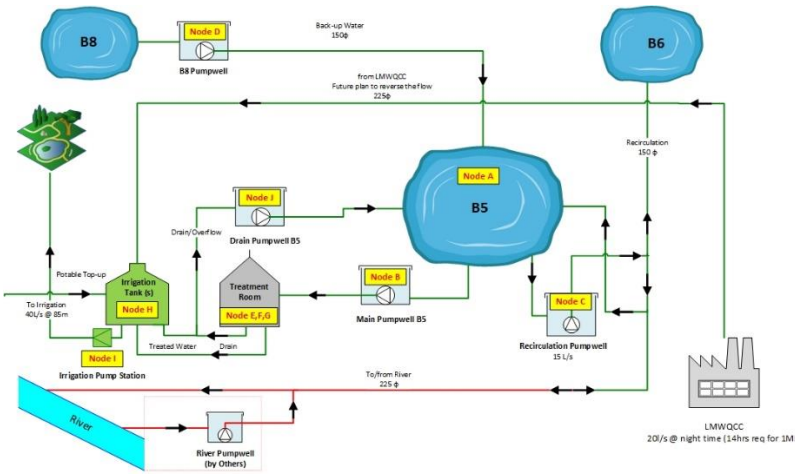
Location ***Ginninderry, ACT***

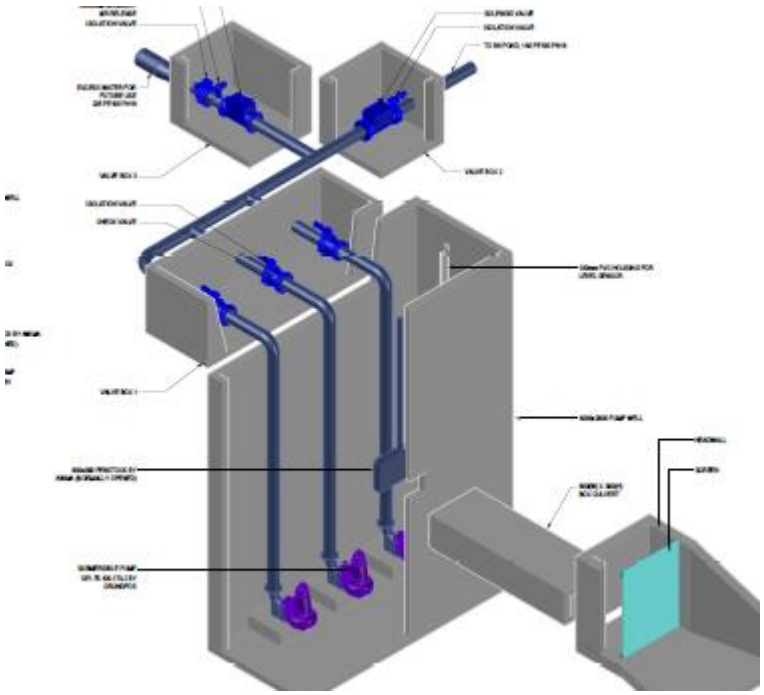
Project Description

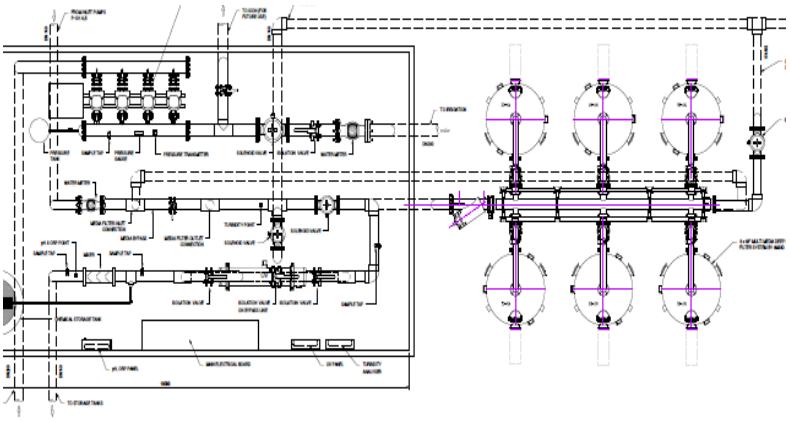
Ginninderry stretches from the north western suburbs of Canberra (Holt and Macgregor) across the ACT/NSW border into a part of the Yass Valley. It is bounded on two sides by the Murrumbidgee River and Ginninderra Creek. Our team delivered Risk assessment, HAZOP, detailed design and planning of 1 ML per day water recycling and runoff management scheme

The whole scheme will see industrial reuse coupled with stormwater harvesting, with backup river extraction, plus internal water transfer and exchange between ponds to ensure oxygenation and continuous treatment.

Based on all our work with the ACT government on their own scheme, they recommended us to assist this developer to design and implement a scheme that would both protect the environment, and save the scarce resource that is water in this inland location







Project Outcomes

Our design package passed a comprehensive assessment by ACT Government and external auditors. The system is now in the construction stage. .

Project Blackmore Oval Wetland and Stormwater Harvesting Project – Design, Construct, Operation and Maintenance

Client ***Inner West Council***

Location ***Blackmore Oval, Leichhardt***

Project Description

The Blackmore Oval Stormwater Harvesting System and Wetland Improvement Project was won as an alternative design and construction tender. The project involved both a new stormwater harvesting system for Blackmore Oval harvesting water from an offtake and pumpwell, treating it and delivering it to the existing irrigation system, and any excess water during the daytime (to use the solar panels at the site) to be pumped up to the rectified wetland system with 4,000 plants which is now a community feature compared to its former past as an RMS spill control basin and a dumping ground.

Project Outcomes

The project was constructed and commissioned in 2017 and we have been providing on going operation and maintenance for the system since then.

Project City of Canterbury Bankstown Council – Water Quality Monitoring and Operation & Maintenance

Client *Canterbury Bankstown Council*

Location *Blick Oval, Jim Ring Oval, Graf Park, Crest Sports Complex and Sefton Golf Course*

Project Description

Our team undertook the Audit of 5 existing water recycling schemes which were not performing due to either design or operation and this audit led to a comprehensive Review, Consultation, Optimisation & Rectification Plans, and Risk Assessment and Operation Consultation.

A thorough appreciation of each scheme has been developed that indicated strengths and weakness and gap analysis, opportunities and constraints report with recommendations for each project.

Problems included blocking offtakes, offtakes on the base of ponds, inappropriate GPT pre-treatment, and a lack of understanding of correct equipment installation for operation and also long-term maintenance. The schemes are being progressively updated as can be afforded. Optimal Stormwater is also undertaking Councils WSUD Audit

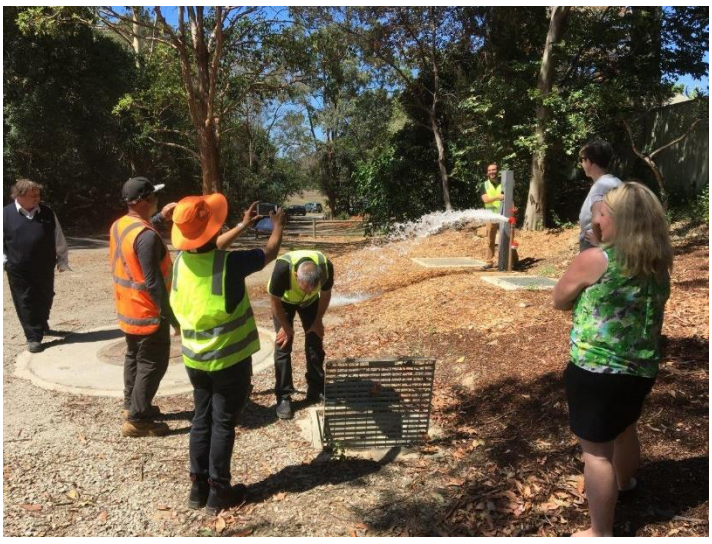
Project Outcomes

4 out of 5 systems were rectified and recommissioned by out team. We undertook the operation and maintenance of the rectified systems.

Project Stormwater Harvesting Feasibility, Concept, Detailed Design & Construction

Client *City of Ryde*

Location *Bill Mitchell Park, Gladesville*



Project Description

Our team were engaged to provide the Feasibility, Concept and Detailed Design of a GPT at Bill Mitchell Park, Gladesville. Ryde Council desired to also use this GPT as the gravity offtake for a stormwater harvesting tank so that the raw water tank to be cost effectively constructed at the same time as the GPT to ensure that the future stormwater harvesting construction could be easily installed. Our team was engaged for the stormwater harvesting concept design and water balance modelling at the site and designed an underground 100KL concrete tank connected to the GPT via gravity would provide the best water reliability outcome for the site.

We then won the construction of the system in late 2016 and constructed the stormwater harvesting treatment infrastructure and pipelines and connected it to the newly constructed irrigation system for the park. The system was designed to be extended upstream to Peel Park and also contains a tanker truck top which Council are regularly using and now want to put into every SWH scheme!

Project Outcomes

The project commissioned in 2016 and now is the most sustainable system in LGA. This system supplied around 95% of the demand over the past 5 years. Our team has been providing on going operation, maintenance and water quality monitoring for this system from the commissioning day.

Project Water Recycling Construction & Commissioning

Client *City of Sydney*

Location *Waterloo Oval, Waterloo*

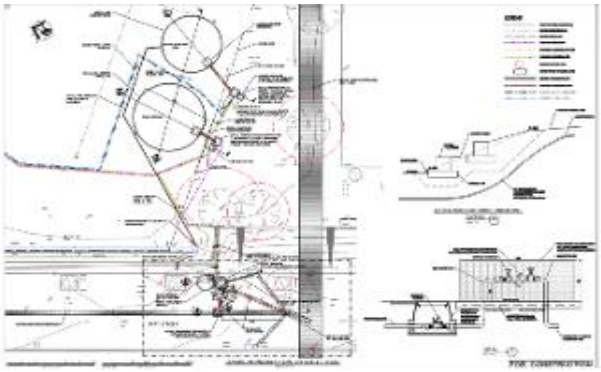
Project Description

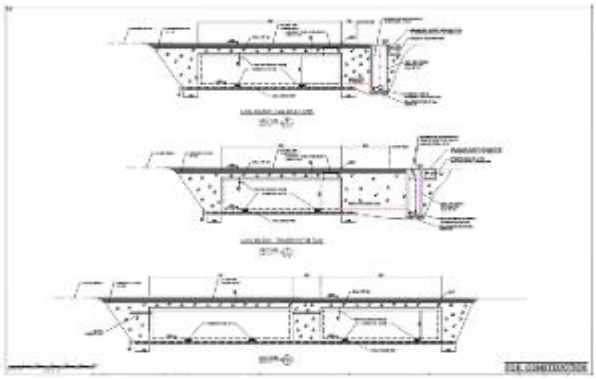
The project involved a drop offtake from the City of Sydney's 600mm stormwater drain, with gravity feed into a CDS unit with a pumpwell next to the CDS. Flow tests determined that this arrangement would produce the most reliable supply of water to the pumpwell and harvesting solution.

Treatment system was included two stage filtration system and UV disinfection. The solution involved the use of a 150KL & 250KL Panther storage tanks underneath Waterloo Oval.

Project Outcomes

The system was commissioned in 2012 and is operational and supplying recycled water for the oval irrigation. Our team has been providing operation and maintenance service for this site as part of our major contract for operation and maintenance of City of Sydney water infrastructures.





Project Water Recycling Construction & Commissioning

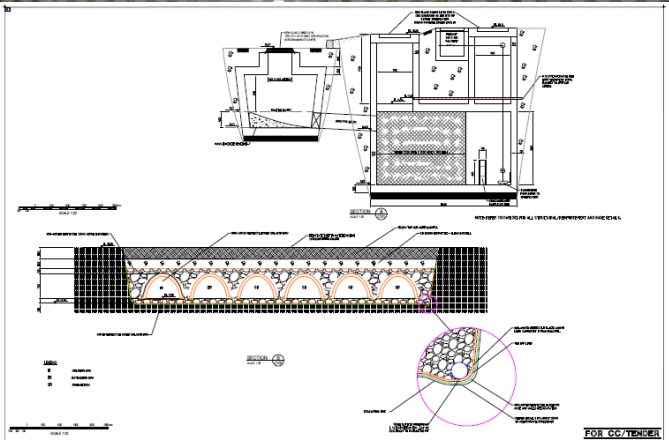
Client *City of Sydney*

Location *Alexandria Oval, Alexandria*

Project Description

We were selected for the construction of a stormwater harvesting solution in Alexandria at Alexandria Oval for the City of Sydney.

The project involved a drop offtake from a Sydney Water covered stormwater culvert, with gravity feed into an SMS GPT. The Submerged Maxi Screen is GPT is focused on maximising the screening area and pump protection, it is not designed to be a high performance GPT, it is designed to offer the most reliable supply of water to the pumpwell and harvesting solution.



The solution also involved the use of an underground tank installation, an underground Offtake and GPT, underground Stormtech storage arches, plus a Screening Filter, Media Filtration, Disinfection and a control system to make it all work. The equipment was retrofitted into an existing plant room with an easy-to-use control system with the end result beautiful harvested stormwater

Project Outcomes

The system was commissioned in 2011 and is operational and supplying recycled water for the oval irrigation. Our team has been providing operation and maintenance service for this site as part of our major contract for operation and maintenance of City of Sydney water infrastructures.

Project Stormwater Harvesting Design, Construction & Commissioning

Client *Kogarah Council*

Location *Council Depot, Carlton*

Project Description

We won the design and construction of a reasonably small harvesting system for the Kogarah Council depot at Carlton.

A previous harvesting system was in place on a Sydney Water channel nearby, and our team was selected to upgrade the offtake works which included upgrading the existing drop grate offtake, plan a new rising main to get this water to the Council depot, install a new treatment and disinfection system, and store the water in new elevated polymer tanks. Harvested water is to be used for high pressure washing of garbage trucks, put tankered away for remote irrigation of median strips, parks and gardens. The water was desired to have a 0.5mg/L chlorine residual, so a sodium hypochlorite dosing system was used for the disinfection and

All the treatment and storage works had to fit within the existing Council depot and cause minimal disruption to existing activities.

Project Outcomes

The construction was priced to suit Council's available budget and re-used a lot of existing infrastructure. Construction was finalised in 2016.

Project Stormwater Water Treatment Plant Audit

Client *Greater Dandenong Council*

Location *Meridian Estate, Melbourne*

Project Description

We were engaged by the City of Greater Dandenong to undertake an audit on an existing water recycling system which was handed over by Places Victoria. We provided an audit with a presentation, a report, a couple of site inspections and an electrical check on all the existing equipment. The report recommended on immediate works required on a legal basis, and other priority works that are highly recommended to get the system functioning.

Project Outcomes

The audit has been completed and the City of Dandenong is using it for a Living Rivers Grant Application and to decide on future works for the site.

Project Eco-Community Development Design

Client *Mitton Consulting*

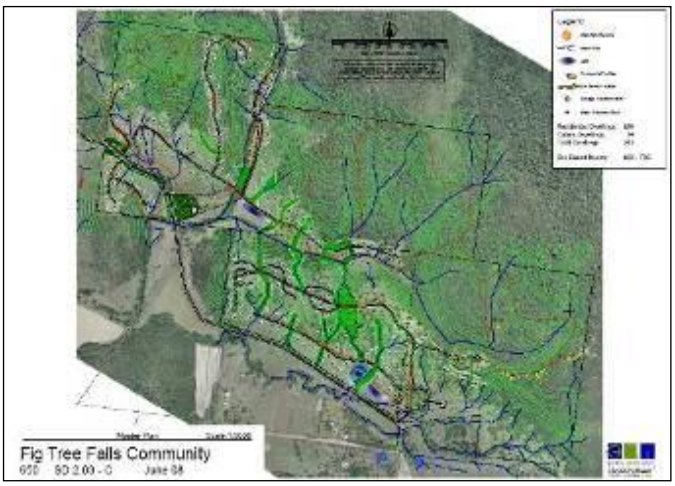
Location *Figtree Falls Eco Resort, Whitsundays*

Project Description

The project was a masterplan development for an exclusive Eco-community development in Tropical QLD. The masterplan included total integrated water management plan and incorporating recycled water for irrigation and toilet flushing as well as providing a reliable potable water source for the development. Water balance modelling was carried out of the entire development and water quality and flood modelling using software such as MUSIC and HEC-RAS was undertaken. Stormwater harvesting options were investigated and stormwater quality objectives identified.

Project Outcomes

The site has been given DA approval and will be going ahead with the construction.



Project Wastewater Treatment and Recycling Feasibility Study

Client *Canberra Institute of Technology (CIT)*

Location *Canberra Institute of Technology, Canberra*

Project Description

The Canberra Institute of Technology (CIT), Bruce Campus will no longer have any access to town water for irrigation if Stage 4 water restrictions are introduced as expected in the foreseeable future. Bore water currently provides 80-90% of the summer irrigation needs of Bruce Campus. CIT has previously used 15 ML of bore water from a licensed bore on the site. However, this license has recently been upgraded to a total of 29ML. Even though the bore water volume has nearly doubled, the future irrigation demand at CIT (Bruce and Weston Campuses) cannot be met with this source. Consequently, CIT is responding to water restrictions by investigating alternative non-potable water supplies.

Our team were commissioned to investigate the use of alternate water supplies for irrigation of landscape areas and horticultural irrigation at the CIT.

Project Outcomes

The feasibility determined that there are sufficient water sources to meet the non-potable water demands and water recycling will provide approximately 45% of water required for general irrigation needs.

Project Stormwater Water Management Design

Client *Bass Coast Shire Council*

Location *Wonthaggi Recreational Reserve, Wonthaggi*

Project Description

We were nominated as a finalist in the Stormwater Victoria Awards of Excellence for their Stormwater Harvesting Design project down at Wonthaggi. Up against a massive Desal plant, Stormwater Harvesting was still very much on the agenda for sustainability and environmental outcome benefits.

The project encompasses flooding control, retention, detention, bio-infiltration, underground storage, harvesting, treatment and reuse. This project has just about everything!

Project Outcomes

The design involves capture of flows up to a 10 year event, with reuse of as much of this water as possible. The pretreatment and offtake is via a CDS unit, followed by an Invisible Structures underground 1ML tank. A treatment shed utilising 5 micron media filtration and disinfection then delivers irrigation water to the existing oval irrigation header tank, at the discharge usage rate, to avoid additional storage requirements.

This project encompassed just about every element of stormwater management, and Bass Coast Shire Council were very happy with the outcome.

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Project Dewatering Treatment Design

Client *Wyong Shire Council*

Location *Wyong Depot, Long Jetty*

Project Description

Our team had experience with the design of similar collection and dewatering facilities in the past. They were engaged by Wyong Shire Council to address an environmental problem where pollutants were leaving a Council depot due to inadequate controls.

The project included the civil and structural design of concrete slab works as well as a new collection and treatment system to improve the downstream environment. The works entailed modelling of pollutants and hydraulics as well as the specification and drawings.

Project Outcomes

The site had a variety of hydraulic and pollution issue to be solved, with the project taking into account both short-term outcomes and long-term objectives. With only treated water leaving the site its now primed for reuse. Water could be reused on site for truckwashing activities, dust control, toilet flushing and irrigation.

Project Enhanced Bacteria Injection for Sewage Overflow Contamination Control

Client ***Bankstown Council and Sydney Water***

Location ***Muluga Pond, Bankstown***

Project Description

Due to sewerage overflow upstream of Muluga pond, the bioretention system we contaminated and affected the treatment capacity of the wetlands. The pond was also contaminated with ammonia and biological contaminants.

Our team worked with UNSW to tailor enhanced bacteria to treat the bioretention contamination alongside with short-term aeration.

Project Outcomes

The project is still active and the results are outstanding. Both Sydney Water and Council are happy with the outcomes.

We were commissioned to deliver the second stage of dosing in May 2021.

NEV Water

Appendix A5.1(a)

Experience – Network Operator

NEV were the owners and developers for the construction of Stage 1 subdivision civil works including water and sewer infrastructure.

Nev have operated the scheme since May 2019.

INNACO

Track Record

May 2021

About INNACO

Innaco and its partners have an extensive and proven track record and are devoted to deliver ongoing high-quality services to client in regard to the operation and maintenance of the site. Innaco, with our parent company Henry & Hymas, has over 80 experienced engineers and professionals practising in water, civil and structural engineering and has worked on numerous water and wastewater treatment plants and water recycling projects.

Innaco has a long track record of successful operation and maintenance management of water treatment plants and utilities around NSW and ACT. Innaco not only has long service contracts for operating and maintaining most of the plants they built, but also rectified and service many plants that have not been built by Innaco.

Effective operational management is performed by technically qualified and experienced personnel under local standards and regulations, assuring health and safety of their employees. A multidisciplinary back-office team supports O&M site teams and provides technological solutions for changing and unexpected conditions and requirements.

Innaco offer full turn-key solutions of water and wastewater treatment and recycling with focus on operation and maintenance service. We have a wealth of experience both in the design, construction and operation and maintenance of treatment plants. We consider our services to be unique to the client having all required design, automation, process, electrical, mechanical and operation and maintenance expertise in-house. Innaco has 15 full time operations staff that can cater to any water, wastewater or other water quality request.

Today, Innaco and H&H water group including our sister company Optimal Stormwater (owned by H&H) are providing ongoing operation & maintenance engineering service, and operation management and optimisation consultancy to 122 decentralised environmental system all around NSW and ACT (refer to table 1 – active project list).

Figure 1 Photos from INNACO Sites

Table 1 Active Operation and Maintenance Projects List

no.	Client	Number of Schemes
1	Ku-ring-gai Council	3
2	Georges River Council	2
3	Mirvac	2
4	City of Sydney	23
5	Blacktown Council	8
6	Mosman Council	2
7	Nth Sydney Council	6
8	Bankstown Council	5
9	Ryde Council	4
10	ACT Government	16
11	Parramatta Council	18
12	Randwick Council	18
13	Narara Eco Village	2
14	River Group - Ginninderry	1
15	BGIS	4
16	UTS	1
17	Veolia	1
18	Concord Golf Course	1
19	Bega Valley	1
20	City of Knox	4
Total		**122**

We are proud to say that we are delivering superior service to not most of our clients but **100%** of our clients are satisfied from our performance and all of them can provide positive reference for the superior service that they are receiving. We achieved **99% compliance** with all of our tradewaste agreements and maximum recycled water delivery in our water recycling schemes.

Innaco is a certified BNG contractor, all of our operation team receive extensive safety training and holds state and national safety certificates (refer to key personnel training and qualifications in service delivery plan). By implementing comprehensive WHSE policies, trainings, and support we had ZERO WHS incidents over the last 10 years.

INNACO Process and Operation Engineering Team

Our process and operation engineering team are comprised of professional, experienced and motivated personnel, available 24/7, to provide professional services in the following fields:

- Process Engineering (water quality, equipment, optimisation studies)
- Operation and Maintenance (routine, preventive, reactive and predictive maintenance even over the weekends and public holidays)
- Electrical works (troubleshooting and rectifications on the switch boards, control panels, VSD controllers, pumps and instruments)
- Equipment Service (pumps, filters, aeration systems, reactors, UVs, dosing systems & instruments)
- Develop and maintain asset management systems
- Water chemistry analysis
- Process static and dynamic simulations
- Pilot test and bacteria farming
- Working with Hazardous Chemicals
- Auditing, design, construction, validation, commissioning, upgrade and optimisation of Water Treatment Schemes
- Assessment and Planning (operation, electrical, process, civil, equipment)
- Water Management Plans, Planning and Implementation of water management plans for Councils, Developers and Property Owners including on-site wastewater management plans
- Licensing and Environmental authority approvals including WICA licensing, EPA, Sydney Water, and the NSW Office of Water among others
- Remote monitoring
- Work in Confined Spaces
- Sampling and on-site water quality tests and result analysis

Our Operation, Maintenance and Optimisation Experience

Relevant Experience Summary

Innaco and the H&H Water Group have been working alongside numerous metropolitan councils in NSW to design, review, upgrade, automate, and restore their water and wastewater treatment infrastructures to operational status. We worked on a wide range of wastewater influents with different characteristics and different effluent quality requirements. This wide range experience provided our team invaluable callability and knowledge to deal with different scenarios and offer innovative solutions to our clients.

The list below describes more than 40 projects that we have been working on with a number of other Councils to achieve optimised outcomes for over 150 systems.

As part of the operational systems, we are successfully operating:

- More than 250 pumps, including + 400 l/s pump stations, large bore pumps, leachate and sewer mining pumps
- 8 biological reactors for leachate and sewage treatment
- More than 70 disinfection systems, including some of the largest units in NSW
- More than 80 filtration systems
- More than 50 chemical dosing units
- Numerous instruments such as level sensors, switches, pressure indicators and multiple control systems
- More than 50 SCADA systems

We have 15 process, chemical, mechanical and electrical engineers in our process and operations team. We have mechanical engineers and technicians only in our process and operation engineering section. We have internal IT support as well as guys that design and build HMI control panels. The core business of this section is operation and maintenance of water infrastructures and we developed a team that has the capacity for delivering routine, preventative and reactive maintenance requirements for all our projects in-house. We only outsource some civil works, vacuum tankers, and some drainage works to our construction section or our project delivery partners.

As mentioned, we are providing operation and maintenance services to many different clients and we are proud to say that 100% of our clients can be our referees if you wish.

Project NTGC Sewer and Leachate Treatment and Recycling Plant Design, Construction, Commissioning & Operations & Maintenance *(MLE Process)*

Client *Ku-Ring-Gai Council*

Location *North Turramurra Golf Course, North Turramurra*

Project Description

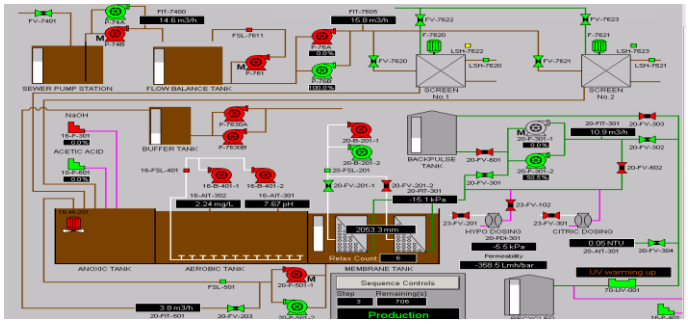
Sewage and landfill leachate are being pumped from a Sydney Water manhole approximately 800m away from the treatment plant in a valley with more than 100m elevation difference. The biological process is a MLE based with membranes and disinfection at the end of the process. As part of the project, Innaco has also constructed a substation to boost the electrical supply at the site. Solar panels have been installed on the roof of the treatment plant building

Total capacity of the plant is 300kL/day and it is treating sewage as well as leachate from the old landfill on site. The bioreactor was specifically designed to deal with high ammonia leachate mixed with raw sewage. Innaco has developed relationships with key stakeholders such as Sydney Water and the NSW Office of Water (previously Department of Water and Energy). Innaco along with Henry & Hymas has been involved with this project from feasibility stage and currently has a 15 year operation and maintenance contract on the project.

The recycled water plant is used to irrigate the golf course and the treatment plant has a capacity of 300kL/day.

Project Outcomes

Innaco team operate this system with no foaming, minimal chemical consumption, and all the tradewaste results are complying with Sydney Water limits. Innaco recently optimised the plant and increased its treatment capacity by 15%.



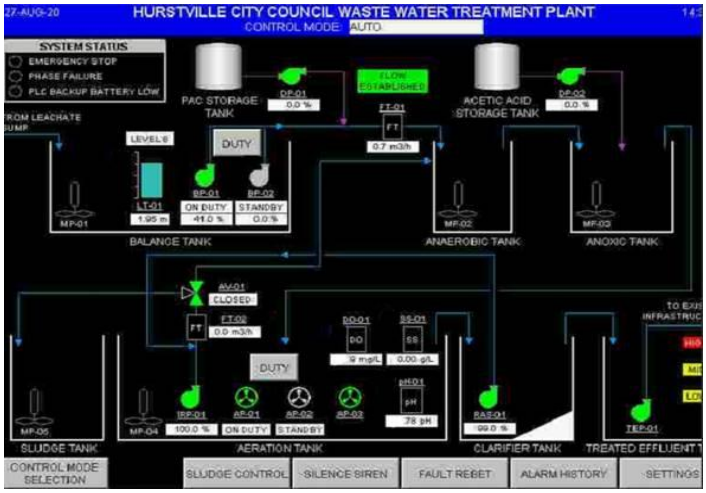
Project Leachate Treatment Plant Re-design, Optimisation, Commissioning and Operation & Maintenance *(MLE process)*

Client *Georges River Council*

Location *Hurstville Golf Course, Hurstville*

Project Description

In 2015 Innaco was awarded the operation and maintenance of the Hurstville Golf Course Leachate Treatment Plant. The leachate treatment plant had been installed a few years prior to enable discharge into a Sydney Water sewer under a tradewaste agreement. Due to numerous issues and the fact that the plant had not been commissioned properly, it had failed to meet tradewaste discharge standards. As such, Georges River Council (previously Hurstville Council) approached Innaco to look at make necessary rectifications and re-commission the plant to ensure that it was meeting tradewaste requirements. Innaco did a full bench test of the biological process and had the plant working within its discharge limits in 6 weeks after some modifications to aeration and adding tailored supplements to ensure the biological process was healthy. The treatment process is MLE and installed in a pedestrian walkway. It is important to Council that the system works with no foaming due health and environmental concerns.



Project Outcomes

We reduced the ammonia level to <1 mg/l, significantly reduced the amount of chemicals used, and has been operating the plant with zero foaming without dosing anti-foams. Innaco was later rewarded the operation and maintenance of the plant. To this date, there has been no breach of the tradewaste agreement since optimising the plant.

Innaco was recently awarded the operation and maintenance of the stormwater harvesting system and irrigation system associated with the Hurstville Golf Course as an addition to the maintenance contract for the leachate treatment plant

Project Wastewater Treatment and Recycling Design, Construction, Commissioning and Operation & Maintenance *(MLE process)*

Client *Ku-Ring-Gai Council*

Location *Gordon Golf Course, Gordon*

Project Description

Innaco was selected by Ku-ring-gai Council to design, construct, operate and maintain the 300kL/d sewer mining plant and storage facility as the water supply option for Gordon Golf Course.

Having design staff with construction experience, and operational experience of plumbing, electrical, chemical, process and control systems makes for much better designs and much more robust solutions.

The nitrifying reactor in Gordon is similar to Shellharbour and consists of an anoxic tank and aeration tank, with RAS pumps.

Major part of the power supply for the plant is coming from solar panels installed on the roof

Innaco has been operating the site since 2011 on a 15-year maintenance contract.

Project Outcomes

This plant was selected as the most sustainable decentralised sewer mining plant in its size by Sydney University in 2015. The cost of recycled water is $1.83/kL, which was the most cost-effective sewer mining plant in in NSW.

Innaco team operate this system with no foaming, minimal chemical consumption, and all the tradewaste results are complying with Sydney Water limits. Gordon Golf Course didn't use any potable water for irrigation over the past 6 years, which is the result of operating the system with zero downtime due to breakdowns.

Project: Maroubra Depot Truck Wash (*MLE Process*)

Client *Randwick Council*

Location *Maroubra Depot, Maroubra*

Project Description

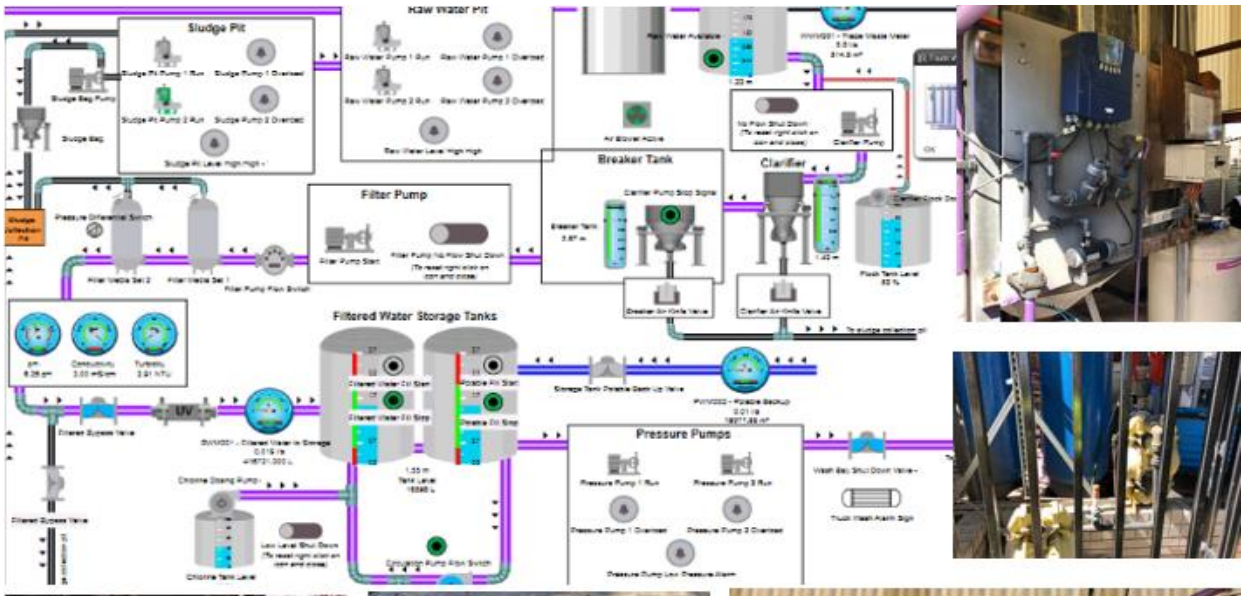
At Maroubra Depot, Innaco optimised and now maintain a wastewater treatment and recycling plant, which collects truckwash runoff from Council's garbage trucks. Council had issues for maintaining the tradewaste agreement considering high level of pollutants including ammonia, BOD, TSS and low pH from the runoff.

Innaco team optimised Councils system and worked together with Syntek Environmental (Lei) to apply modified bacteria to increase the bio-reactor capacity and also remove hair, oil and grease from the influent to the system.

Our team then worked on the MLE process to improve the settling in the clarifier and improved the feed to the filtration system and chemical dosing.

Project Outcomes

The results are stunning, this system now works with minimum discharge to sewer, all the tradewaste results over the past 3 years are complying, and potable usage for truckwash reduced by supplying maximum grade A recycled water.



Project 8 Chifley Square Blackwater Treatment Plant *(MLE Process)*

Client *Mirvac l*

Location *8 Chifley Square, Sydney*

Project Description

Innaco finalised the design, supply and installation of a 50kL/day recycled water plant for providing water for irrigation, cooling towers and toilet flushing in a new commercial building at 8 Chifley Square in Sydney. Innaco prepared the documentation under the Water Industry Competition Act (WICA) to enable operation of the scheme, full process, mechanical and electrical design, and the installation of all equipment in the treatment room. The plant has been installed as per May 2013 and final approval from the Minister for commercial operation was achieved in October 2014 following extensive validation and verification.

8 Chifley Square is a premium grade, sustainable commercial tower on a landmark Sydney CBD site. It will stand a height of 30 storeys, with an approximate net lettable area of 19,000 square metres. The colourful building has both a six-star Green Star and five-star ABGR rating, the highest level of certification available under both systems

The treatment is an MLE based process including ultrafiltration modules as well as reverse osmosis followed by disinfection using UV light and chlorine.

Project Outcomes

The technology assessment undertaken by a third party for the WICA license indicated that the proposed treatment is able to meet the high-risk exposure level for recycled water per the Australian Guidelines for Water Recycling and it has been endorsed by IPART under the Water Industry Competition Act. As part of the project, Innaco obtained the comprehensive operation and maintenance contract for the blackwater treatment plant as well as a comprehensive operation and maintenance contract for a rainwater harvesting system built by others at the site. Our operation and maintenance crew has ensured that the plant has met strict requirements under WICA at all times

Project St Ives Showground Leachate Treatment

Client *Ku-Ring-Gai Council*

Location *Gordon Golf Course, Gordon*

Project Description

A disused landfill tip in St Ives is being mined for irrigation water for use on the nearby showground. The disposal of the leachate was previously a significant cost to Kuring-Gai Council. With the new treatment plant (utilising a screen filter, sand/zeolite filtration, activated carbon and disinfection), Council is reusing up to 160kL/day of treated water supplying the nearby Showground (toilets and irrigation) and Nursery (irrigation). Backwash from the treatment plant is treated through a bioretention basin and a grass swale before being discharged back to the leachate pond.

Innaco has operated and maintained this particular plant for the last 10 years and has been involved in this project from feasibility stage (full turnkey solution). The treatment equipment was sourced from various treatment equipment suppliers to achieve the best outcome and to minimise operation and maintenance cost for the client.

Project Outcomes

The scheme has been working efficiently over the past 10 years, supplied millions of litres of reclaimed water, and provided considerable cost savings to Council. Innaco recently awarded the contract to operate the system for another 5 years.

The project received a **"Keep Australia Beautiful" award in 2011**

Project Leachate Treatment System Sydney Olympic Park – Single Leachate Management System

Client *Sydney Olympic Park Authority*

Location *Sydney Olympic Park*

Project Description

Innaco's team were engaged through parent company Henry & Hymas by Sydney Olympic Park Authority to undertake detailed design of a single leachate management system for the ten remediated landfill sites at Sydney Olympic Park. The leachate quality varies significantly between the different landfill sites and as such Henry & Hymas designed a single leachate management treatment system consisting of blending and monitoring of low strength and high strength leachate for disposal into sewer under a trade waste agreement. The system collects and transfers leachate in more than 5km of rising mains around the site to a central treatment system located near the P5 carpark. The system is fully automated and can discharge up to 160kL/day of leachate. On-line monitoring of trade waste parameters ensure that compliance is met at all times. Careful consideration had to be given to the location of the disposal due to the WRAMS recycled water system in place at Sydney Olympic Park. Furthermore, existing leachate treatment systems on-site were prioritised and utilised as much as possible for disposal before disposal

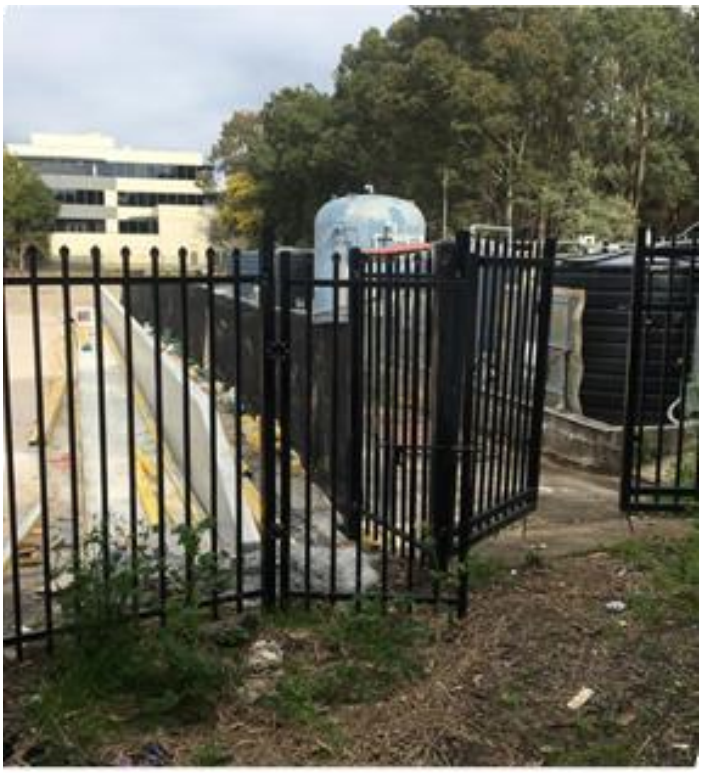
Project Outcomes

The project was constructed in 2020 and successfully commissioned. The system has met all the criteria and tradewaste requirements.

Project Leachate Treatment System Sydney Park

Client *City of Sydney*

Location *Euston Road, Sydney Park*



Project Description

Innaco's team were engaged through parent company Henry & Hymas by City of Sydney Council to develop options for short-term and long-term leachate management at Sydney Park. The existing leachate treatment plant on site has been costly to run without providing sufficient treatment to reduce key parameters for discharge of treated leachate to sewer. Henry & Hymas did an options analysis by reviewing historical water quality data and the current process and developed three separate options for consideration by the City. It was found that significant savings could be made by implementing a bypass strategy and optimising treatment in the future if required based on the continuous improvement in raw leachate quality on site.

Project Outcomes

The City has adopted one of the options investigated by Henry & Hymas and this has reduced the overall operation and maintenance cost significantly. In addition, Henry & Hymas has designed structural improvements to the current bunding on site.

Innaco is now assisting City of Sydney with the operation and maintenance and will fully takeover the project from July 2021.

Project Leachate Treatment Whytes Gully Landfill

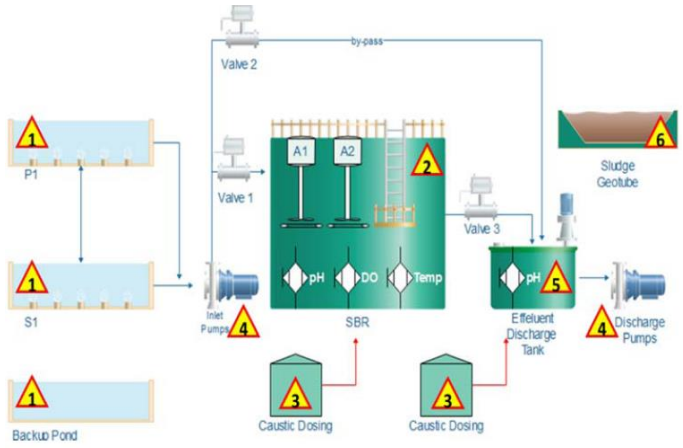
Client *Wollongong City Council*

Location *Wollongong*

Project Description

Innaco was engaged by Wollongong City Council to operate and maintain the leachate treatment system at Wollongong Waste Recovery Park (Whytes Gully Landfill site) for a period of 18 months (with extensions of 3 x 6 months). This system had considerable issues including multiple breaches with Sydney Water tradewaste agreement, excessive foaming, and limited discharge capacity 150 kl/day. The treatment plant consists of aerated leachate ponds followed by sequential biological reactors (SBR).

Innaco operated the leachate transfer equipment, the treatment process and sludge removal system on site and is constantly monitored the site to ensure that leachate volumes are maintained and disposed of accordingly.



Project Outcomes

This project was a resounding success. Innaco team address all of the operation issues which were inherited from previous contractor, and has successfully upgraded the plant to achieve a significant increase in the overall discharge capacity from 150 kl/day to 550 kl/day. Treated leachate quality improved considerably and we achieved more than 99% compliance with the tradewaste agreement. We exceeded contract KPIs in all the performance reviews, which were done by different contract and landfill managers over the course of operations. In 2020, there were changes in the landfill management and Innaco contract was finished. A local wastewater company took over the operation. Even though Innaco's contract was finished, but we provided training and operation support for four months after contract termination to ensure that the new contractor understands the modified process. We still have the formal and positive performance reviews and using the landfill and contract managers that we worked with as our references.

Project Leachate Treatment System Sydney Olympic Park – Wetland Treatment

Client *Sydney Olympic Park Authority*

Location *Sydney Olympic Park*

Project Description

Innaco's team were engaged through parent company Henry & Hymas by Sydney Olympic Park Authority to undertake the design of a leachate treatment wetland and associated civil works in partnership with Australian Wetlands Consulting (AWC) and Enviro Pacific Services (EPS) at Sydney Olympic Park. The existing stormwater detention ponds on the former golf driving range at Shirley Strickland Drive were found in a detailed design by AWC to be suitable for re-use as leachate treatment wetlands. The leachate treatment wetlands deliver treated water suitable for irrigation of the Former Golf Driving Range surrounds. Henry & Hymas partnered with AWC and EPS to deliver the design components of the design and construction project. Henry & Hymas delivered the civil, mechanical and process designs which included a bio-retention system, drainage redirection, vehicle access, tanks, pumps and rising mains, functional specification and structural slabs.

Project Outcomes

The project was constructed in 2018 and successfully commissioned.

Project Liquid Waste Receival Facility Icon Water

Client *Icon Water*

Location *Canberra, ACT*

Project Description

Innaco undertook the design of a liquid waste receival facility at the Lower Molongolo Water Quality Control Centre in Canberra, ACT. The liquid waste receival facility is removing solids from the liquid stream via a solids handling system containing munchers and screens and also operates via a swipe card system which is used by Icon Water to charge tankers for unloading waste. The facility is connected to the Water Quality Control Centre via an inlet connection. Innaco are undertaking full architectural, civil, structural, process, mechanical and electrical design for the facility including (but not limited to):

- Widening of existing access roads
- Facility slab and solids handling system
- Retaining walls
- Electrical control and process control
- Stormwater drainage
- Steel roof detailing
- Mechanical connections and controls
- Connection to a 2.1m diameter inlet pipe, 7m deep
- Turning circles for semi-trailers to be able to access the site
- Site security and lighting
- Rainwater tanks and reuse system
- Pumpstations
- Switchroom and amenities block
- Laboratory building
- Bulk earthworks

Project Outcomes

The project was constructed in 2017 and successfully commissioned.

Project Shellharbour Leachate Treatment Options Assessment

Client *Shellharbour Council*

Location *Dunmore Recycling and Waste Disposal Facility, Shellharbour*

Project Description

Innaco were engaged by Shellharbour Council to conduct a comprehensive study on the leachate treatment and disposal options for Shellharbour Council.

Innaco developed a detailed options assessment with cost benefit analysis and scoring method for different options including SBR, MLE+SBR, Reuse, and Treatment and Tankering.

Our team ran multiple bench tests on different cultures and multiple samples from fresh leachate. Innaco engineering team also ran a static simulation on different options.

After going through a detailed assessment process and, due to limitations for storage and mixing capacity on site, a MLE+ SBR process was specified for leachate treatment to reduce the ammonia level and proper mixing prior to treatment.

Our team also developed the design for the pipelines and pumpstation for discharging the treated leachate to Sydney Water sewer system.

Project Outcomes

Innaco options study was reviewed and assessed by multiple external consultants engaged by Council. The MLE+SBR process was selected and project is under construction now.

Project PFOS/PFAS Treatment Amberley Airforce

Client *BMT WBM*

Location *Amberley Airforce Base, Queensland*

Project Description

Innaco was engaged by BMT WBM to conduct a process analysis and options assessment for PFOS treatment at Amberley Airforce. Runoff from the plane wash section of the air force base was contaminated by PFOS from the washing foam. The air force base had an existing treatment facility for PFOS removal, but it was underperforming and was not capable of effectively removing PFOS due to design and operational issues, such as inefficient oil removal unit, unbalances chemical dosing, and poor GAC unit.

Innaco conducted a process analysis and options assessment on the treatment process and developed a comprehensive rectification plan for BMT to address the oil removal, and suspended solids by adding a DAF unit. This unit improves the feed to the GAC filter and makes the chemical dosing more effective against PFOS. For oxidising PFOS a mixture of rainwater recycling unit for dilution before oxidation was proposed to absorption of PFOS in the GAC.

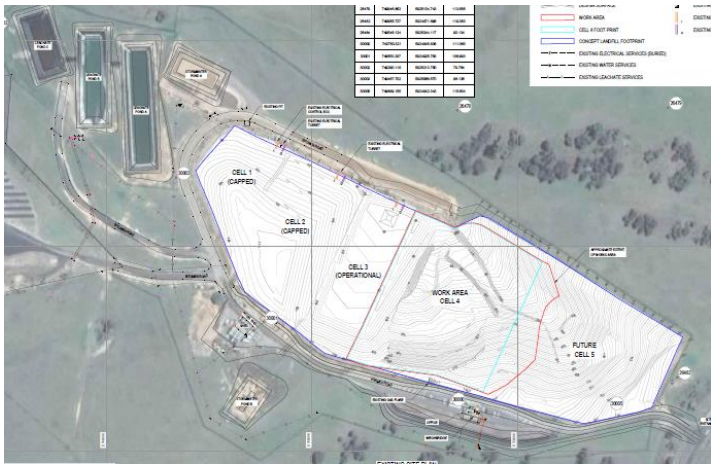
Project Outcomes

Innaco received a positive feedback from BMT on the options assessment report. The report and plans were used as part of a master plan project by Defence for addressing PFOS and wastewater quality improvements in the Defence basis.

Project Bega Valley Leachate Treatment Options Assessment

Client *Bega Valley Council*

Location *Bega Valley*



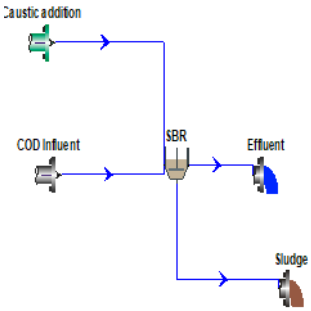
Project Description

Innaco were engaged by Bega Valley Council in April 2021 to conduct a comprehensive study on the leachate treatment and disposal options for Bega Valley Council.

Innaco developed a detailed options assessment with cost benefit analysis and scoring method for different options.

Our team ran multiple bench tests on different cultures and multiple samples from fresh leachate. Innaco engineering team also ran a static simulation on different options.

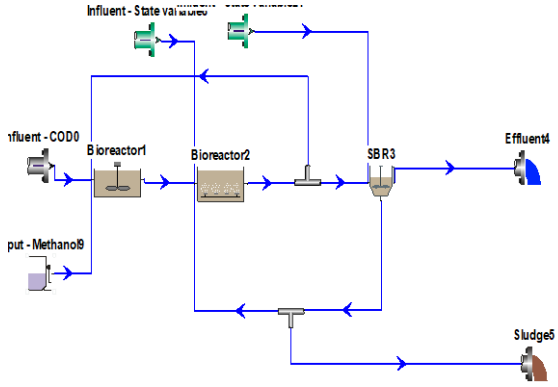
Considering the location of the site options such as leachate incineration and using wetlands for disposal are being assessed.



Element name	COD Influent
Flow	50
Total COD mgCOD/L	2450.00
Total Kjeldahl Nitrogen mgN/L	1450.00
Total P mgP/L	20.00
Nitrate N mgN/L	0
pH	8.00
Alkalinity mmol/L	59.00
ISS Influent mgISS/L	45.00
Calcium mg/L	80.00
Magnesium mg/L	15.00
Dissolved O2 mg/L	0

Project Outcomes

The project is still active and Innaco will submit the final assessment report for the best leachate management and disposal based on the detailed scoring method to Council in June 2021.



Water Recycling and Wastewater Treatment Infrastructure Operation, Maintenance and Optimisation for Randwick City Council (18 systems)

Project Description

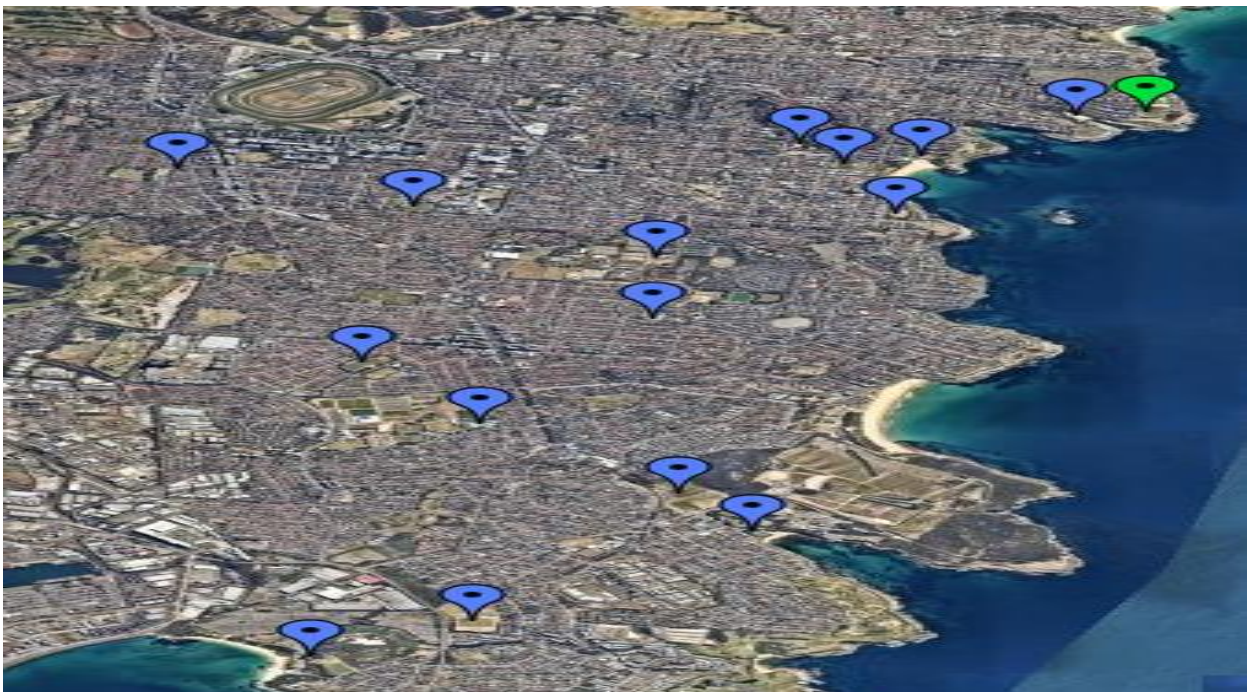
Operation, Maintenance, documentation, water quality monitoring, rectifications and optimisation of 18 water recycling, wastewater, and bore water treatment infrastructures for Randwick City Council. This project includes some of the largest water recycling and bore water supply systems in NSW such as Coogee Oval, Yarra Bay, and Chifley Reserve. Innaco team audited all of these schemes, developed asset management plans, water quality database and a rectification list with RCA method. Innaco process and operation engineering team is now providing ongoing operation and maintenance for these systems

- ✓ *Clovelly South, Clovelly Beach*
- ✓ *Burrows Park , Clovelly North*
- ✓ *Dunningham, Coogee*
- ✓ *Coogee Oval*
- ✓ *Grant Reserve, Coogee*
- ✓ *Des Renford Leisure Centre*
- ✓ *Bardon Park, Coogee*
- ✓ *Paine Reserve, Randwick*
- ✓ *RCC Community Centre, Randwick*
- ✓ *Council Plant Nursery, Kensington*
- ✓ *Depot WTP, 192 Storey Street, Maroubra*

Purcell Park

- ✓ *Pioneers Park , Malabar*
- ✓ *Cromwell Park, Malabar*
- ✓ *Nagle Park, Maroubra*
- ✓ *Chifley Reserve,*
- ✓ *Yarra Bay Bicentennial Park, Philip Bay*

Maroubra



Water Recycling

City of Randwick project includes more than 16 water recycling systems. These systems encompass offtake pump stations, GPTs, filtration, biological, disinfection and water quality monitoring stations. Most of these systems are centralised treatment and distribute the recycled water to a number of different enduse tanks. Innaco operates the systems from the catchment to the irrigation network.

Bore Water

There are four major bore water supply systems as part of this projects. Innaco team provides on going monitoring and operation and maintenance of these bore water supply systems.

Iron Removal

There are two systems at Randwick that have a high concentration of iron at their inlets. Innaco team operates an innovative iron removal system which works based on air oxidation and membrane without the need for chemical dosing. This system works very efficient and Pioneer and Paine Reserve systems supplied more than 90% of the irrigation demand

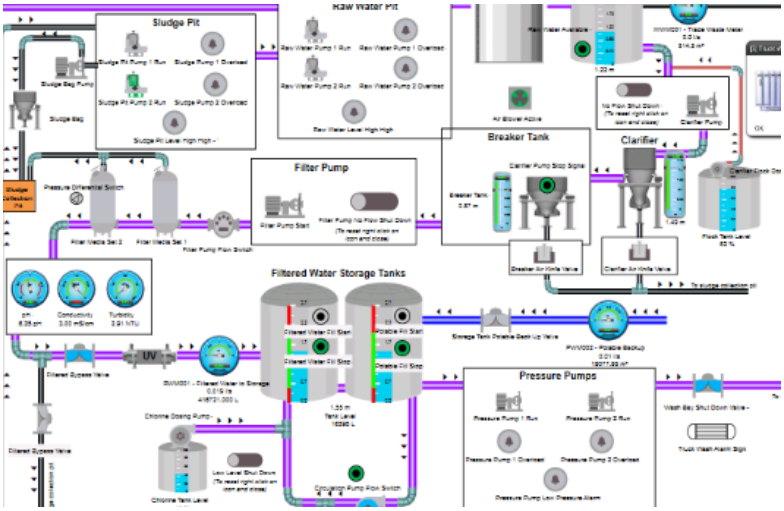
Remote Monitoring via CTS

All systems at Randwick Council are connected to CTS SCADA system. Innaco team provides ongoing remote monitoring and operation of all of these systems.

This is something that could apply to more sites in the future

Reporting

Innaco team provide comprehensive monthly reports in excel database format on the performance of the systems, water quality, efficiency, assets condition, maintenance schedules, and usage for all systems, and attend to monthly contract meetings for operation and optimisation planning.



Auditing and validation

As part of the operation and maintenance contract Innaco team were responsible to conduct a detailed asset auditing and database preparation. An automated database in excel format was submitted to Council, which covers all their assets information.

Project Outcomes

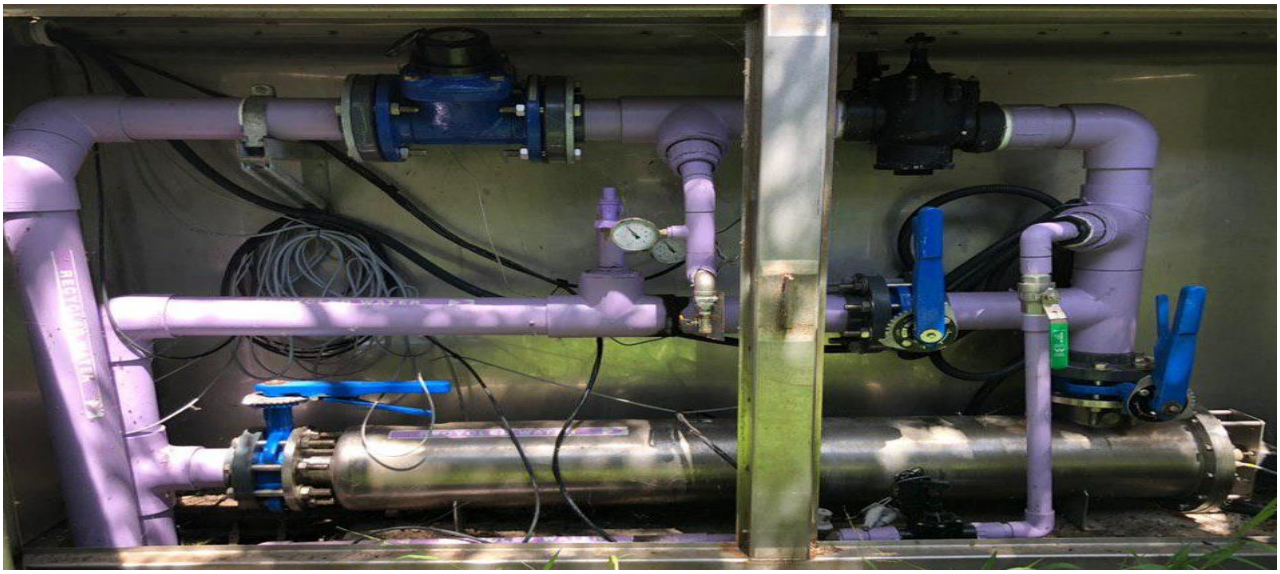
Systems performance, efficiency, water quality, recycled water volumes, and process documentation were optimised over the course of contract, and we are still Council's operator for these systems.

Water Recycling Infrastructure Audit, Automation Upgrades, Rectifications, and Operation and Maintenance for Paramatta City Council (18 systems)

Project Description

Innaco engaged through our sister company Optimal Stormwater to deliver the operation and maintenance contract for City of Parramata Council to operate and maintain their water recycling infrastructures. CoP has 18 water recycling plants. The Innaco team started with asset condition and performance assessment, then developed a detailed database, and water quality monitoring program. Now we are providing operation, maintenance, optimisation and automation upgrade works for Parramatta Council, and was successful in improving their asset performance by 100%.

- ✓ *Third Settlement Reserve*
- ✓ *Arthur Phillip Reserve*
- ✓ *Possum Patch Childcare Centre*
- ✓ *Rydalmere Park*
- ✓ *Cowells Lane Nursery*
- ✓ *Binnalong Park*
- ✓ *Boronia Park*
- ✓ *Boronia Park / Stormwater Re-use System*
- ✓ *Northmead Child Care Centre*
- ✓ *Rosella Park*
- ✓ *Council Rydalmere Operations Centre**
- ✓ *North Rocks Park*
- ✓ *Somerville Oval**
- ✓ *Doyle**
- ✓ *Ollie Webb Reserve*
- ✓ *Jubilee Hill Child Care Centre*



Operation and Maintenance

The City of Parramatta has 18 water recycling systems. Most of these systems are sophisticated systems and include rain gardens, multi stage filtrations, disinfection, and large storage tanks. The end-uses are irrigation, toilet flushing, and laundries, which requires grade-A recycled water quality with comprehensive CCPs.

Automation Upgrades

Parramatta Council engaged us to develop, install and commission a centralised SCADA system to monitor and operate their large schemes. Innaco team developed an Allen Bradley PC based SCADA system for Council and commissioned that for 50% of their large schemes. The rest of them will be connected to the centralised monitoring and control SCADA over the next financial year.

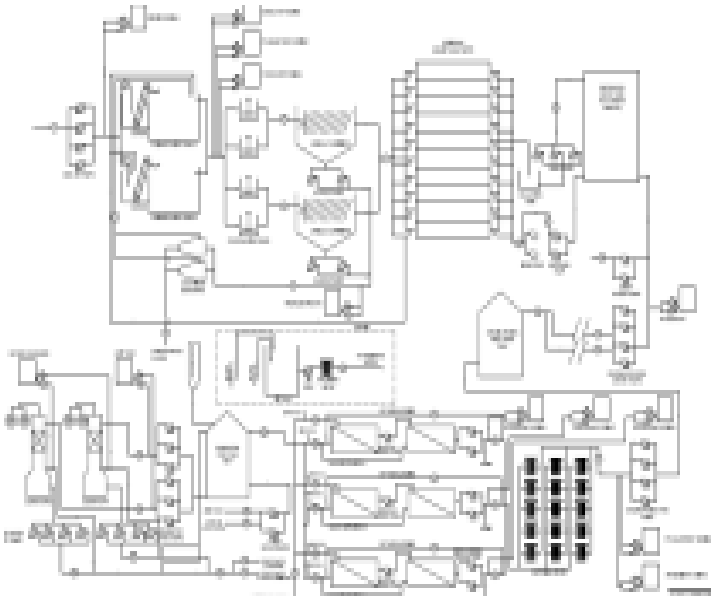
Project Outcomes

Systems performance, efficiency, water quality, recycled water volumes, process documentation, and automation system were optimised over the course of contract, and we are still Council's operator for their systems.

Project 128,000,000 litres a day Water Treatment Plant for Oil Extraction - Zubair Oil Field, Iraq

Client *Alsaraf*

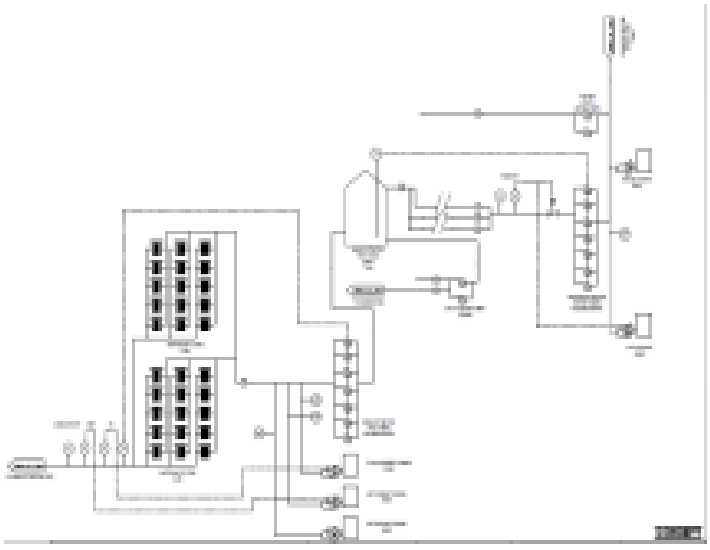
Location *Zubair Oil Field, Iraq*



Project Description

Henry & Hymas undertook concept designs including process flow diagrams and P&IDs for a large water treatment plant (128ML/day) in Iraq. The project included treating water from a river to a standard where it could be injected to the oil reserve to extract oil. It also included treating the return water to a standard where it could be discharged back into the river under strict environmental conditions. The project also included the concept design of transfer pipelines (DN600-DN675).

Treatment process was included, multi stage screening, settling tanks, clarifiers, microfiltration, nano-filtration, chemical dosing, and deaeration. Innaco did the concept, simulation process, mass balance, flow calculations, and 3000 l/s transfer pumpstation.



Project Outcomes

Project passed the comprehensive approval process by ENI in Italy, and Iraqi Minister of Petroleum and Minister of Environment, however, it was then went on hold because of the Covid in 2020. .

Project Reticulation Network Operation & Maintenance Consultation

Client *ACT Government*

Location *Canberra Inner North*

Project Description

Inner North Reticulation Network is the largest SWH scheme in the southern hemisphere. This system also includes a Managed Aquifer Recharge system and supplies recycled water to 18 end-user systems for irrigation

Innaco team is engaged in review, operation consultation and optimisation of the Inner North Reticulation Network. This includes reviewing the existing documents, drawing and design to sort relevant information to operation and validation. The development of the standard operating and procedure templates are followed by initial assessment and review and preparation of the O&M documents and ongoing task by operator. In this project the system performance has been reviewed against to National Water Quality Management Strategy and an Optimisation Plan has been prepared.

Also, Innaco team through optimal stormwater have prepared the P&IDs for entire harvesting system. And develop the functional description for the entire system & site specifics, including auto/manual condition description chart.

Project Outcomes

Operational review & water quality requirements have enabled a reliable and cost-effective long-term maintenance of the water harvesting scheme. ACT Government passed the regulator audit with the documents that were prepared by our team.

Project Technical Specification & Risk Assessment/ Process Validation on treatment system, End Users tanks sampling, water quality results analysis, condition assessment & SOP development

Client *ACT Government*

Location *Canberra*

Project Description

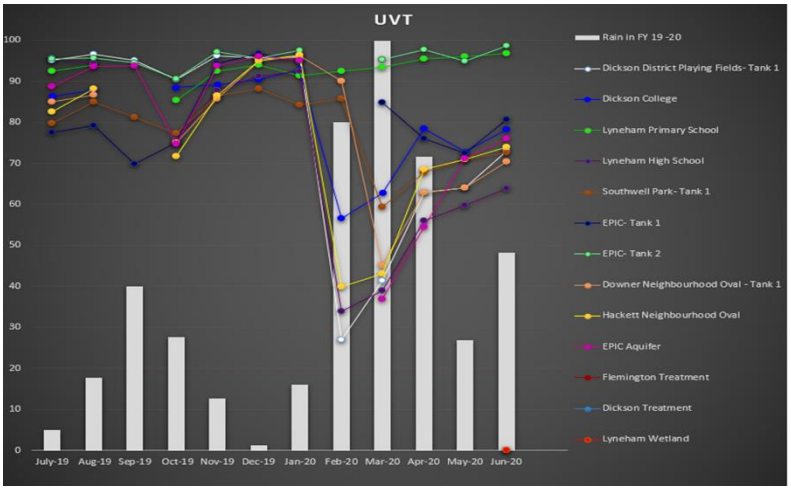
Innaco team were engaged to undertake consultancy services associated with the preparation of technical specification document for the INRN system. This constitute a comprehensive review of information, Preparation of technical specifications.

Omid has undertaken a detailed risk assessment of the SWH scheme includes the treatment process, storage and the distribution system, Identify hazards, prioritise (i.e. assess) the risks of each hazard, control measures, and preparation of a detailed risk elimination plan in accordance with the National Guidelines.

As part of this project a comprehensive assessment has been implemented on the end user's tanks and develop Standard Operating Procedures and WQ monitoring plans for the end user tanks (added to WIOP).

Project Outcomes

The document that can be utilized in design development of these schemes such as a municipal infrastructure standard. Preparation of a risk map on the treatment and distribution system resulting in water quality assurance.



Project Operation and maintenance of Angus Creek Stormwater Harvesting scheme (one of the largest schemes in NSW 200 MLD)

Client *Blacktown City Council*

Location *Council PO Box 63 Blacktown NSW 2148*

Project Description

This system is one of the largest stormwater harvesting systems in NSW with a capacity of 120 – 200 ML per year. After successful commissioning and process validation of the system and submission of the final document, Innaco was engaged through Optimal for the long-term operation and maintenance of the system since 2017. We have successfully operated the system to supply recycled water to the irrigation tanks. And then we were engaged to provide a comprehensive assessment, operation and rectification of the system during the commissioning process.

An extensive water quality monitoring, instruments & equipment adjustment, calibration and servicing have been implemented, to ensure all the water quality results are meeting the stormwater recycling guidelines.

Project Outcomes

The treatment plant runs at its maximum capacity, and the equipment and instruments are serviced in a way to minimise breakdowns and optimise their life cycle. As a result, the irrigation now runs on just about all treated stormwater, and Innaco has just been engaged to run the scheme for another 5 years from 2020. When a company exceeds expectations, it makes sense to keep them going.

Project Stormwater Harvesting Audit, Rectifications, Operation and Maintenance

Client *North Sydney Council*

Location *North Sydney Stormwater & Rainwater Harvesting Upgrade Scheme*

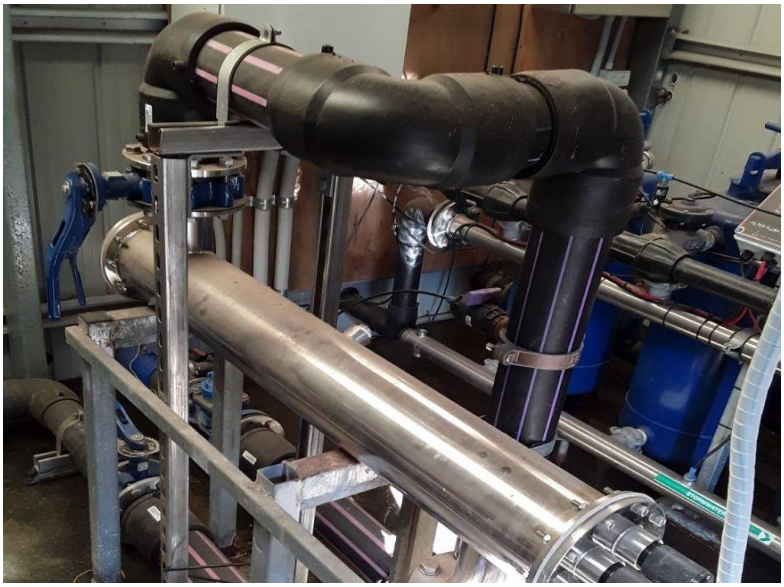
Project Description

Innaco was engaged to provide the North Sydney Stormwater and Rainwater Harvesting Upgrade which included an audit, water quality and water quantity investigations, recommendations, energy efficiency analysis, water balance model and expansion options, project optimisation and upgrade plan, risk assessment, report and presentation.

North Sydney Council had constructed a multi-million-dollar stormwater harvesting scheme which was not delivering the amounts and rates it was designed to. Innaco designed and installed the largest UV system on a SWH scheme in NSW for Nth Sydney.

Project Outcomes

Optimal Stormwater (Innaco sister company) was awarded the operation and maintenance contract of the system in 2018 and has been operating the system and delivering outcome since then. As part of our service, we are doing remote monitoring, preventative maintenance, reactive maintenance and water quality monitoring for the scheme which reliably supplies irrigation water for a Golf Course and 5 sporting ovals.



Project Water Infrastructure Operation & Maintenance – and algae control

Client *City of Ryde*

Location *Ryde LGA*

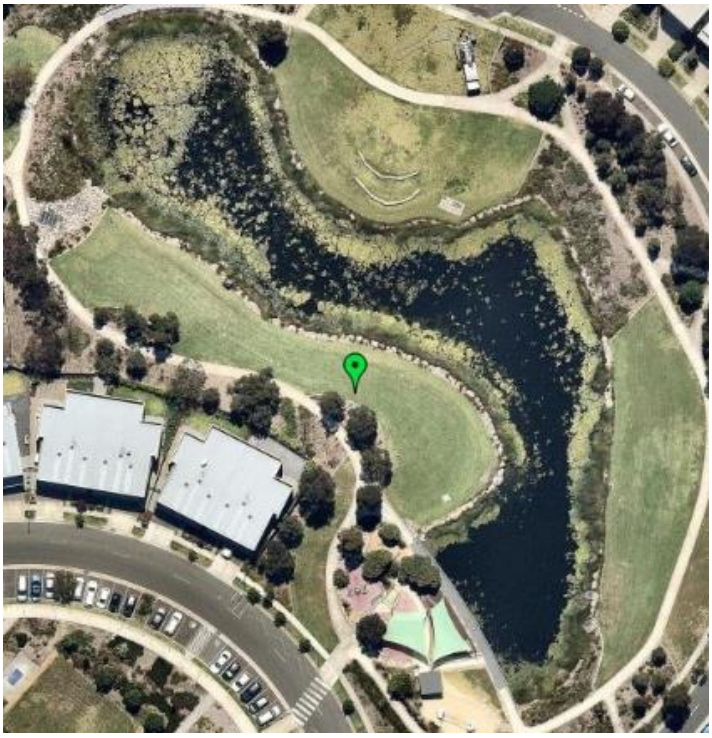
Project Description

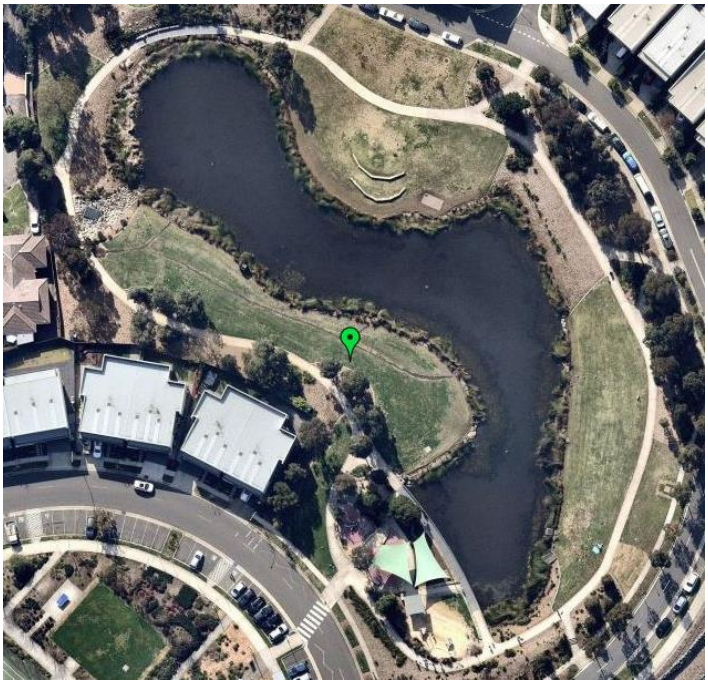
The City of Ryde has 3 large water recycling systems at Meadowbank Park, Ryde Park and Bill Mitchell Park. Innaco team were engaged through our sister company Optimal Stormwater to conduct an audit and asset condition and performance assessment. The comprehensive asset database and condition assessment lead to a large rectification project to address previous operational and design issues. Our team are now providing routine, preventative, reactive maintenance and water quality monitoring services to Council for Meadowbank Park, Ryde Park and Bill Mitchell Park.

Our team were additionally engaged by Council to address algae bloom issue at Council ponds. After addressing the issue with the pond now we are providing on going maintenance for the aeration system and routine chemical dosing. Seen opposite are the aerial image results before and after the operation and maintenance and rectifications took place

Project Outcomes

All the systems are now using a vast majority of recycled water after the audit, rectifications and optimum operation program.





Project Concord Golf Course 600 l/s pumpstation

Client ***Concord Golf Course***

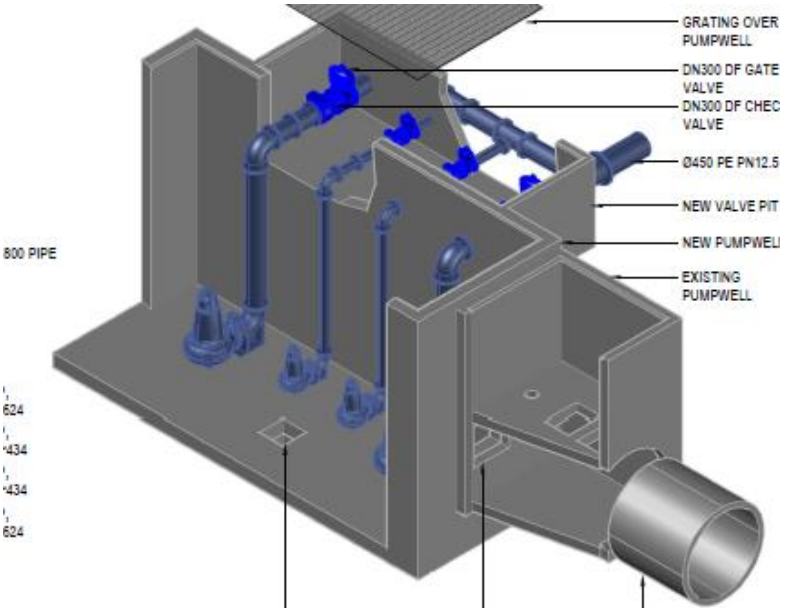
Location ***Concord Golf Course, Concord***

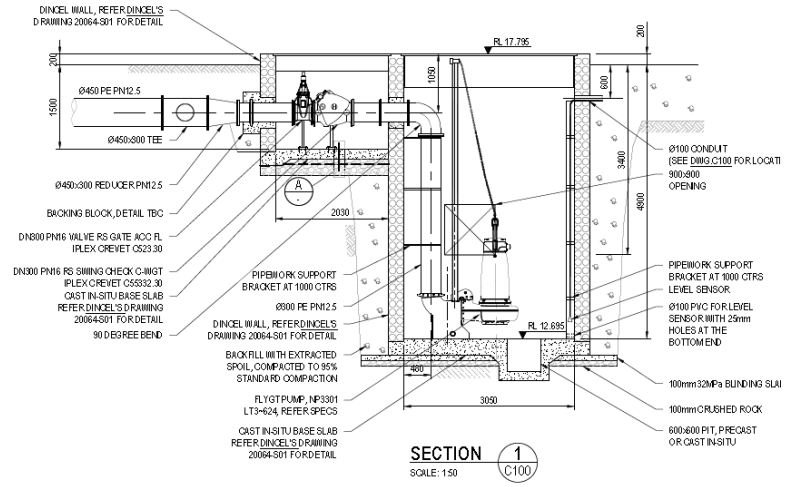
Project Description

The Concord Golf Course is undertaking upgrades and modifications to pumps/pit of a 30 year old stormwater harvesting system and a critical aspect of the proposal is the configuration of new pumps, size (depth, width and length) of the new pit and later on the installation of new GPTs.

Our team undertook the detailed design of the new stormwater harvesting system from process and instrumentation to civil, structural and hydraulic which also included the design of an innovative Dincel cast in situ structure.

The golf course is building these works in anticipation of a hot a dry summer. The next stage will see the pumps installed, process control commissioned, and then the CGC will work with Council on new GPT pre-treatment to protect the pumps.





Project Knox Council Automation, Programming, and Centralised Control of 4 Water Treatment Systems

Client ***Knox City Council***

Location ***Melbourne, Victoria***

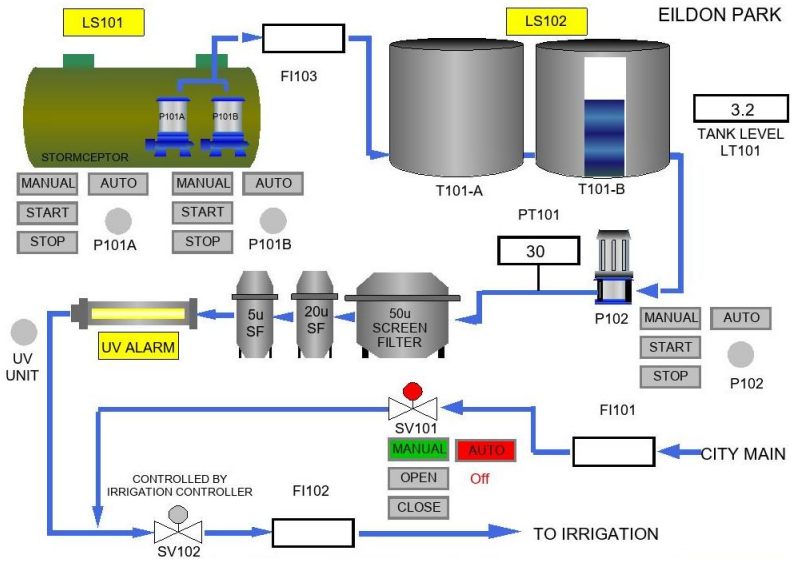
Project Description

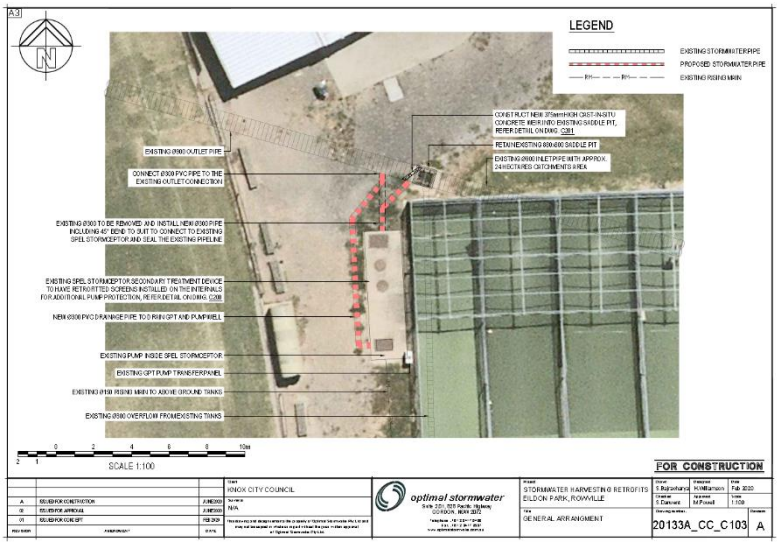
Council went out for tender for the automation, programming and rectification of 4 existing water treatment plants that were non-operational and our team won an alternative tender to redesign and undertake the required electrical, programming, automation, SCADA, civil, structural, hydraulic and process engineering to get the four systems up and running again.

Our team in Sydney worked with our Melbourne office team to deliver the project and address all the issues and install PLCs, HMI, and centralised control system for Council.

Project Outcomes

All the systems are now operational and not lny meeting nut exceeding Council's expectations. They are all now connected to a centralised monitoring and control system.





Project Des Renford Leisure Centre (DRLC)

Client *Randwick Council*

Location *Heffron Park, Maroubra*

Project Description

Innaco was engaged by Randwick Council to do the rehabilitation, operation and maintenance of two water treatment plants at the Des Renford Leisure Centre (DRLC). DRLC is an award-winning facility located in Sydney's Eastern Suburbs at Heffron Park in Maroubra. It is owned and operated by Randwick City Council and comprises of state-of-the-art gym, aerobics and pool facilities. With over 500,000 visitors per year DRLC has a large range of water and dry land activities. The scope of work included the rehabilitation, operation and maintenance of:

Backwash water treatment & recycling plant. Treated water is used for toilet flush and irrigation.

Bore water treatment plant. Treated water is used for pools water make-up.

Project Outcomes

Both systems were rectified and the operational issues were addressed by Innaco. The efficiency of the backwashing system increased by 60% and waste water discharge to sewer was minimized considerably.

Project Relining of Prospect Dry Beds

Client *Prospect Water Filtration Plant*

Location *Cowpasture Rd, Wetherill Park*

Project Description

INNACO undertook civil works in relation to the relining of Prospect Dry beds for the dewatering of sludge from the Prospect Water Filtration Plant. The works that Innaco undertook contained the following:

Excavate areas for remediation and Place the Geo net underneath the soft spots as per manufacturer's instructions.

Fill soft areas with soil from site and compact (beds 1, 2, 3 and 4) to achieve a minimum density ratio in the range of 95% to 98% of the standard maximum dry density

Backfill remediation area with excavated spoil and stockpiled spoil from site

Strip back existing layer of wearing course sandstone and stock pile

Proof roll subgrade (clay layer) with 7 tonne roller to achieve a minimum density ratio in the range of 90% to 95% of the standard maximum dry density

Undertake density testing

Import new material (sandstone) and build up to 100mm layer

Place geotextile markers every 5m over 100mm of ripped sandstone layer

Build sandstone layer up to 300mm

Proof roll sandstone layer

Provide work as executed survey and inspection and test plans

Project Outcomes

The system is now operational and meeting the client expectations.

Project Ginninderry Water Recycling and Runoff Management System

Client ***Riverview Group***

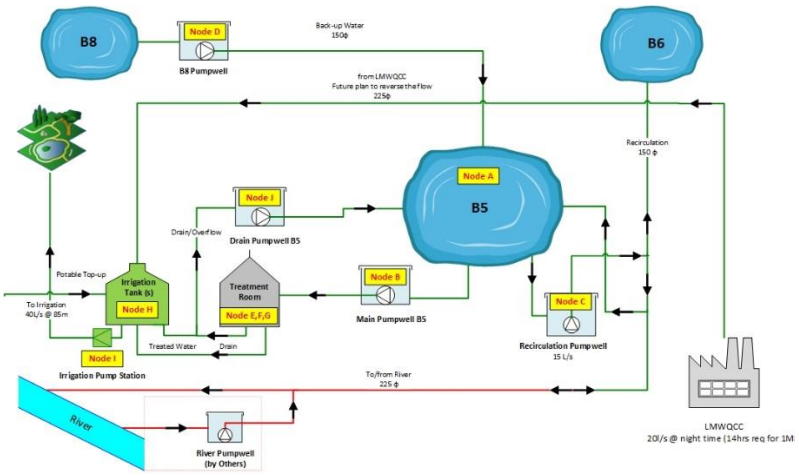
Location ***Ginninderry, ACT***

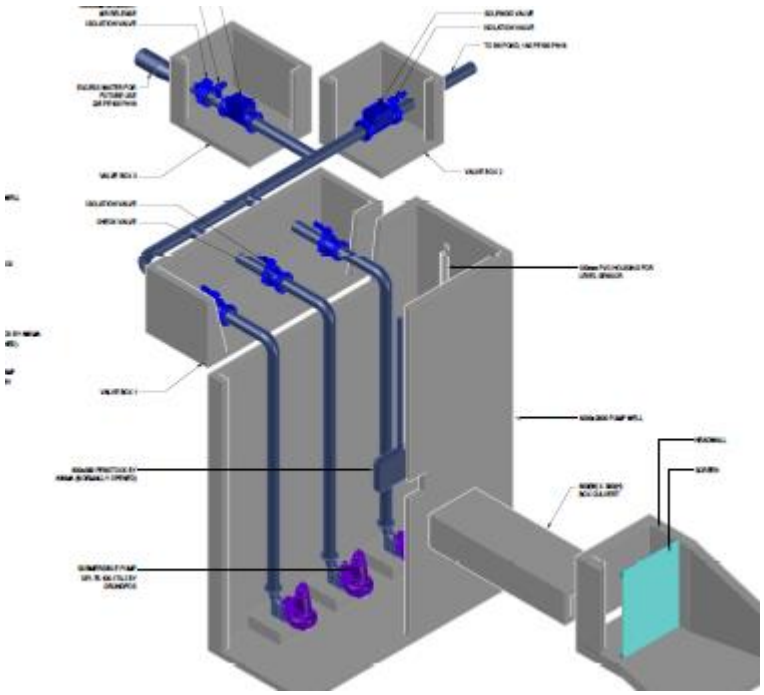
Project Description

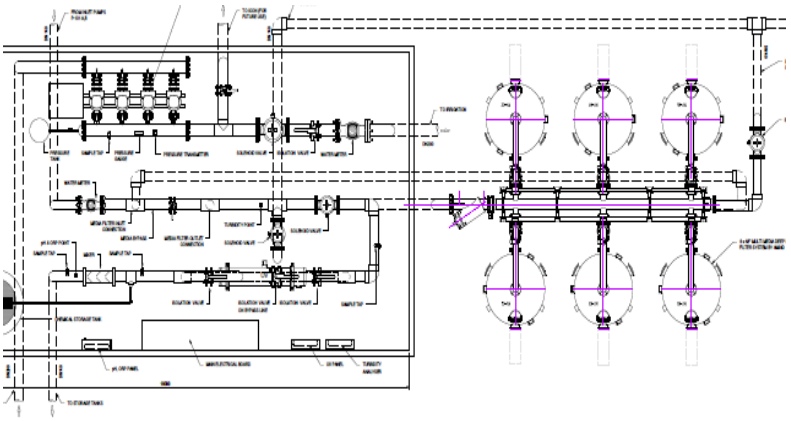
Ginninderry stretches from the north western suburbs of Canberra (Holt and Macgregor) across the ACT/NSW border into a part of the Yass Valley. It is bounded on two sides by the Murrumbidgee River and Ginninderra Creek. Our team delivered Risk assessment, HAZOP, detailed design and planning of 1 ML per day water recycling and runoff management scheme

The whole scheme will see industrial reuse coupled with stormwater harvesting, with backup river extraction, plus internal water transfer and exchange between ponds to ensure oxygenation and continuous treatment.

Based on all our work with the ACT government on their own scheme, they recommended us to assist this developer to design and implement a scheme that would both protect the environment, and save the scarce resource that is water in this inland location







Project Outcomes

Our design package passed a comprehensive assessment by ACT Government and external auditors. The system is now in the construction stage. .

Project Blackmore Oval Wetland and Stormwater Harvesting Project – Design, Construct, Operation and Maintenance

Client ***Inner West Council***

Location ***Blackmore Oval, Leichhardt***

Project Description

The Blackmore Oval Stormwater Harvesting System and Wetland Improvement Project was won as an alternative design and construction tender. The project involved both a new stormwater harvesting system for Blackmore Oval harvesting water from an offtake and pumpwell, treating it and delivering it to the existing irrigation system, and any excess water during the daytime (to use the solar panels at the site) to be pumped up to the rectified wetland system with 4,000 plants which is now a community feature compared to its former past as an RMS spill control basin and a dumping ground.

Project Outcomes

The project was constructed and commissioned in 2017 and we have been providing on going operation and maintenance for the system since then.

Project City of Canterbury Bankstown Council – Water Quality Monitoring and Operation & Maintenance

Client *Canterbury Bankstown Council*

Location *Blick Oval, Jim Ring Oval, Graf Park, Crest Sports Complex and Sefton Golf Course*

Project Description

Our team undertook the Audit of 5 existing water recycling schemes which were not performing due to either design or operation and this audit led to a comprehensive Review, Consultation, Optimisation & Rectification Plans, and Risk Assessment and Operation Consultation.

A thorough appreciation of each scheme has been developed that indicated strengths and weakness and gap analysis, opportunities and constraints report with recommendations for each project.

Problems included blocking offtakes, offtakes on the base of ponds, inappropriate GPT pre-treatment, and a lack of understanding of correct equipment installation for operation and also long-term maintenance. The schemes are being progressively updated as can be afforded. Optimal Stormwater is also undertaking Councils WSUD Audit

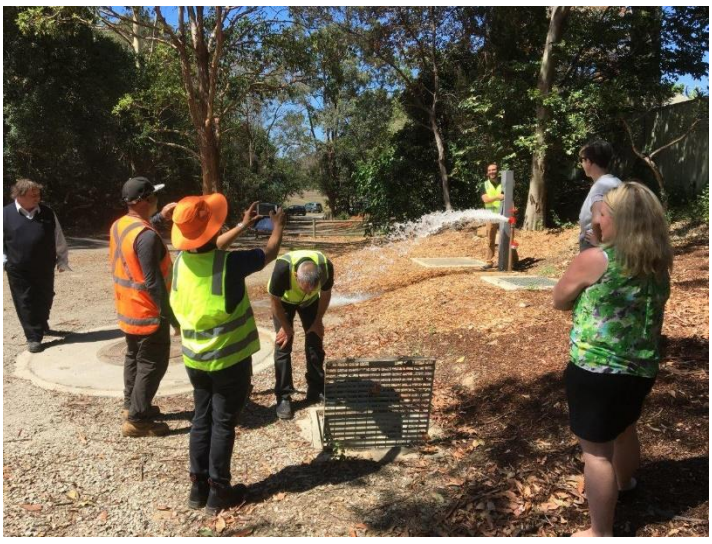
Project Outcomes

4 out of 5 systems were rectified and recommissioned by out team. We undertook the operation and maintenance of the rectified systems.

Project Stormwater Harvesting Feasibility, Concept, Detailed Design & Construction

Client *City of Ryde*

Location *Bill Mitchell Park, Gladesville*



Project Description

Our team were engaged to provide the Feasibility, Concept and Detailed Design of a GPT at Bill Mitchell Park, Gladesville. Ryde Council desired to also use this GPT as the gravity offtake for a stormwater harvesting tank so that the raw water tank to be cost effectively constructed at the same time as the GPT to ensure that the future stormwater harvesting construction could be easily installed. Our team was engaged for the stormwater harvesting concept design and water balance modelling at the site and designed an underground 100KL concrete tank connected to the GPT via gravity would provide the best water reliability outcome for the site.

We then won the construction of the system in late 2016 and constructed the stormwater harvesting treatment infrastructure and pipelines and connected it to the newly constructed irrigation system for the park. The system was designed to be extended upstream to Peel Park and also contains a tanker truck top which Council are regularly using and now want to put into every SWH scheme!

Project Outcomes

The project commissioned in 2016 and now is the most sustainable system in LGA. This system supplied around 95% of the demand over the past 5 years. Our team has been providing on going operation, maintenance and water quality monitoring for this system from the commissioning day.

Project Water Recycling Construction & Commissioning

Client *City of Sydney*

Location *Waterloo Oval, Waterloo*

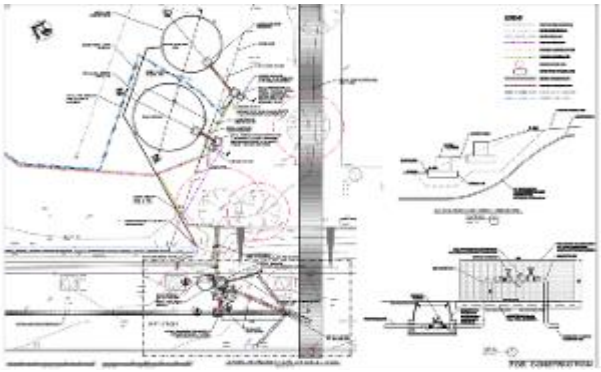
Project Description

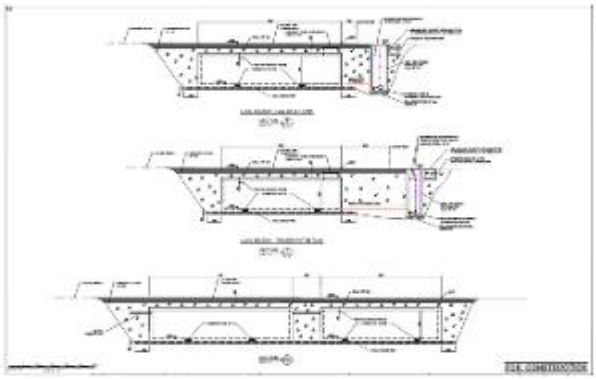
The project involved a drop offtake from the City of Sydney's 600mm stormwater drain, with gravity feed into a CDS unit with a pumpwell next to the CDS. Flow tests determined that this arrangement would produce the most reliable supply of water to the pumpwell and harvesting solution.

Treatment system was included two stage filtration system and UV disinfection. The solution involved the use of a 150KL & 250KL Panther storage tanks underneath Waterloo Oval.

Project Outcomes

The system was commissioned in 2012 and is operational and supplying recycled water for the oval irrigation. Our team has been providing operation and maintenance service for this site as part of our major contract for operation and maintenance of City of Sydney water infrastructures.





Project Water Recycling Construction & Commissioning

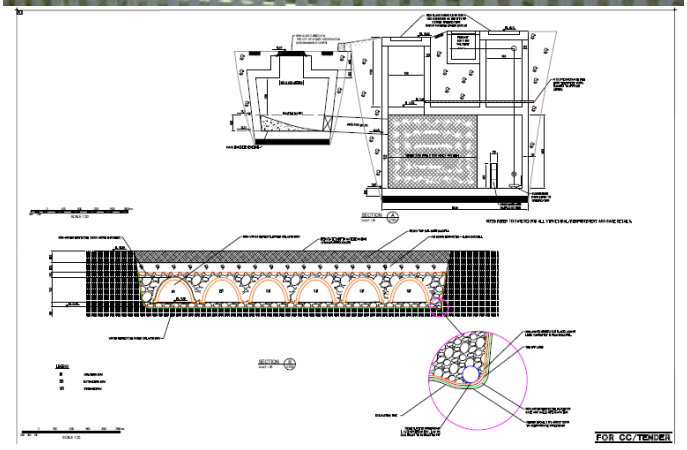
Client *City of Sydney*

Location *Alexandria Oval, Alexandria*

Project Description

We were selected for the construction of a stormwater harvesting solution in Alexandria at Alexandria Oval for the City of Sydney.

The project involved a drop offtake from a Sydney Water covered stormwater culvert, with gravity feed into an SMS GPT. The Submerged Maxi Screen is GPT is focused on maximising the screening area and pump protection, it is not designed to be a high performance GPT, it is designed to offer the most reliable supply of water to the pumpwell and harvesting solution.



The solution also involved the use of an underground tank installation, an underground Offtake and GPT, underground Stormtech storage arches, plus a Screening Filter, Media Filtration, Disinfection and a control system to make it all work. The equipment was retrofitted into an existing plant room with an easy-to-use control system with the end result beautiful harvested stormwater

Project Outcomes

The system was commissioned in 2011 and is operational and supplying recycled water for the oval irrigation. Our team has been providing operation and maintenance service for this site as part of our major contract for operation and maintenance of City of Sydney water infrastructures.

Project Stormwater Harvesting Design, Construction & Commissioning

Client *Kogarah Council*

Location *Council Depot, Carlton*

Project Description

We won the design and construction of a reasonably small harvesting system for the Kogarah Council depot at Carlton.

A previous harvesting system was in place on a Sydney Water channel nearby, and our team was selected to upgrade the offtake works which included upgrading the existing drop grate offtake, plan a new rising main to get this water to the Council depot, install a new treatment and disinfection system, and store the water in new elevated polymer tanks. Harvested water is to be used for high pressure washing of garbage trucks, put tankered away for remote irrigation of median strips, parks and gardens. The water was desired to have a 0.5mg/L chlorine residual, so a sodium hypochlorite dosing system was used for the disinfection and

All the treatment and storage works had to fit within the existing Council depot and cause minimal disruption to existing activities.

Project Outcomes

The construction was priced to suit Council's available budget and re-used a lot of existing infrastructure. Construction was finalised in 2016.

Project Stormwater Water Treatment Plant Audit

Client *Greater Dandenong Council*

Location *Meridian Estate, Melbourne*

Project Description

We were engaged by the City of Greater Dandenong to undertake an audit on an existing water recycling system which was handed over by Places Victoria. We provided an audit with a presentation, a report, a couple of site inspections and an electrical check on all the existing equipment. The report recommended on immediate works required on a legal basis, and other priority works that are highly recommended to get the system functioning.

Project Outcomes

The audit has been completed and the City of Dandenong is using it for a Living Rivers Grant Application and to decide on future works for the site.

Project Eco-Community Development Design

Client *Mitton Consulting*

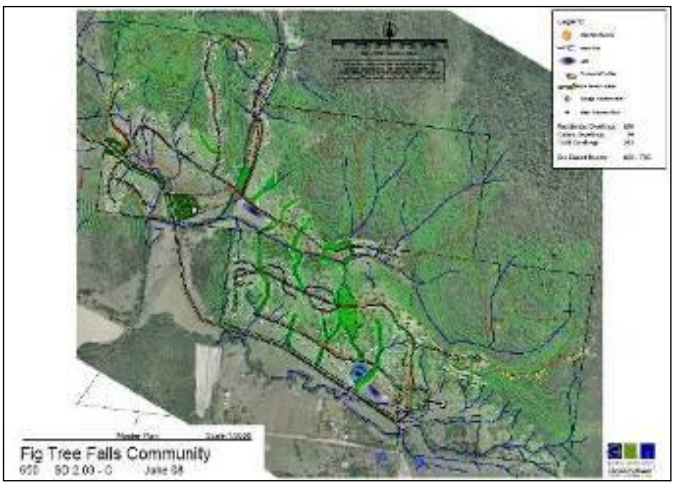
Location *Figtree Falls Eco Resort, Whitsundays*

Project Description

The project was a masterplan development for an exclusive Eco-community development in Tropical QLD. The masterplan included total integrated water management plan and incorporating recycled water for irrigation and toilet flushing as well as providing a reliable potable water source for the development. Water balance modelling was carried out of the entire development and water quality and flood modelling using software such as MUSIC and HEC-RAS was undertaken. Stormwater harvesting options were investigated and stormwater quality objectives identified.

Project Outcomes

The site has been given DA approval and will be going ahead with the construction.



Project Wastewater Treatment and Recycling Feasibility Study

Client *Canberra Institute of Technology (CIT)*

Location *Canberra Institute of Technology, Canberra*

Project Description

The Canberra Institute of Technology (CIT), Bruce Campus will no longer have any access to town water for irrigation if Stage 4 water restrictions are introduced as expected in the foreseeable future. Bore water currently provides 80-90% of the summer irrigation needs of Bruce Campus. CIT has previously used 15 ML of bore water from a licensed bore on the site. However, this license has recently been upgraded to a total of 29ML. Even though the bore water volume has nearly doubled, the future irrigation demand at CIT (Bruce and Weston Campuses) cannot be met with this source. Consequently, CIT is responding to water restrictions by investigating alternative non-potable water supplies.

Our team were commissioned to investigate the use of alternate water supplies for irrigation of landscape areas and horticultural irrigation at the CIT.

Project Outcomes

The feasibility determined that there are sufficient water sources to meet the non-potable water demands and water recycling will provide approximately 45% of water required for general irrigation needs.

Project Stormwater Water Management Design

Client *Bass Coast Shire Council*

Location *Wonthaggi Recreational Reserve, Wonthaggi*

Project Description

We were nominated as a finalist in the Stormwater Victoria Awards of Excellence for their Stormwater Harvesting Design project down at Wonthaggi. Up against a massive Desal plant, Stormwater Harvesting was still very much on the agenda for sustainability and environmental outcome benefits.

The project encompasses flooding control, retention, detention, bio-infiltration, underground storage, harvesting, treatment and reuse. This project has just about everything!

Project Outcomes

The design involves capture of flows up to a 10 year event, with reuse of as much of this water as possible. The pretreatment and offtake is via a CDS unit, followed by an Invisible Structures underground 1ML tank. A treatment shed utilising 5 micron media filtration and disinfection then delivers irrigation water to the existing oval irrigation header tank, at the discharge usage rate, to avoid additional storage requirements.

This project encompassed just about every element of stormwater management, and Bass Coast Shire Council were very happy with the outcome.

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Project Dewatering Treatment Design

Client *Wyong Shire Council*

Location *Wyong Depot, Long Jetty*

Project Description

Our team had experience with the design of similar collection and dewatering facilities in the past. They were engaged by Wyong Shire Council to address an environmental problem where pollutants were leaving a Council depot due to inadequate controls.

The project included the civil and structural design of concrete slab works as well as a new collection and treatment system to improve the downstream environment. The works entailed modelling of pollutants and hydraulics as well as the specification and drawings.

Project Outcomes

The site had a variety of hydraulic and pollution issue to be solved, with the project taking into account both short-term outcomes and long-term objectives. With only treated water leaving the site its now primed for reuse. Water could be reused on site for truckwashing activities, dust control, toilet flushing and irrigation.

Project Enhanced Bacteria Injection for Sewage Overflow Contamination Control

Client ***Bankstown Council and Sydney Water***

Location ***Muluga Pond, Bankstown***

Project Description

Due to sewerage overflow upstream of Muluga pond, the bioretention system we contaminated and affected the treatment capacity of the wetlands. The pond was also contaminated with ammonia and biological contaminants.

Our team worked with UNSW to tailor enhanced bacteria to treat the bioretention contamination alongside with short-term aeration.

Project Outcomes

The project is still active and the results are outstanding. Both Sydney Water and Council are happy with the outcomes.

We were commissioned to deliver the second stage of dosing in May 2021.

CVs of Key Personnel

Contents

1. Narara Ecovillage Co-Operative Pty Ltd

Narara Ecovillage Co-operative Limited (NEV) is responsible for the construction, operation and maintenance of all potable, non-potable and sewerage infrastructure in the scheme from source to customer connection.

NEV will be responsible for the design, construction, commissioning and maintenance of the distribution networks up to the customer connection points in accordance with the Water Services Association of Australia (WSAA) guidelines.

Narara Ecovillage Co-operative Ltd (NEV) has no direct employees and all workers are engaged as either contractors or volunteers.

Table 1. **Narara Ecovillage - Summary of Skills and Experience**

Name	NEV Role relevant to IPART	Expertise	Dominant Background relevant to water management	Skills and Experience – examples – including water management and construction
Detailed Biographies				
John Talbott	NEV CEO Project Team	Technical Organisational	Ecovillage design and construction; High profile sustainability projects Concept development and overall planning for housing, infrastructure, renewable energy production, distribution and infrastructure management; facilitation of community consultation and stakeholder engagement over a twenty year period	Director and project manager at Findhorn ecovillage construction including energy sustainability & wastewater treatment in Scotland. Infrastructure maintenance including potable water distribution network, sewerage system and recycled water network for treated effluent from the Living Machine.
Geoff Cameron	Head of NEV Water Project Team (under contract)	Technical Financial	Water analysis, process plant construction and operation, Project management, Information Technology	Technical officer on food processing plant construction and operation, water analysis at Kraft Foods Ltd, 10 years senior management in construction industry.
David Parris	Contracts Manager (under contract) Legal & Finance Team Project Team	Technical Organisational	Executive management of operations of large scale water & power infrastructure, Senior management of energy/water utility, Project management of major infrastructure projects	Managing the water and electricity operations of the Snowy Scheme, GM at ACTEW, managing the development & construction of AGL major power and hydro projects e.g. $230m Bogong project.
Richard Denham	NEV Director Legal & Finance Team Project Team Land Team	Technical	Registered professional engineer with a degree in Natural Resources and has over 25 years of experience in natural resource management within the public sector	16 years in water resource management and aquatic ecology; 6 years in Crown land policy; and 4 years in Department of Primary Industries policy strategy and reform

Name	NEV Role relevant to IPART	Expertise	Dominant Background relevant to water management	Skills and Experience – examples – including water management and construction
David Roberts	Leader of Project Team (under contract)	Technical	Development of Water Sensitive Urban Design projects for City councils including stormwater treatment devices for irrigation (8 years) Director of rainwater tank installation company (5 years)	Multiple rainwater and stormwater reuse projects including 160kL rainwater reuse and filtration system for Willoughby Leisure Centre, 5ML Concourse tank in Chatswood, Stormwater Harvesting for irrigation in Artarmon.
Summary CV and Skills				
Deborah Mohr	Narara Ecovillage Financial Controller (under contract)	Financial	Chartered Accountant	Financial management, accounting, billing
Megan Wallace	Business Support Team	Financial	BComm (ACA) 25 years experience in financial management	Accounting, billing, treasury and budgeting
Steve Errey	Water Infrastructure Manager (under contract)	Technical	Mechanical Engineer, sewage bio-solids recycling	Project officer at Gosford City Council running project on recycling of green waste and sewage bio-solids. Engineer on hydro-electric power generation systems.
Grant Rickey	NEV Director Project Team	Technical	20 years Project Manager and State Manager in property development and construction industry	Construction management, asset management

Name	NEV Role relevant to IPART	Expertise	Dominant Background relevant to water management	Skills and Experience – examples – including water management and construction
Donna Carey	Business Support Team Land Team Buildings and Infrastructure Team	Technical	Compiling submissions to the Department of Health (15 years). Commercial Business Analyst at Roche Pharmaceuticals (5 years).	Working in research at the University of Sydney Science and Pharmacology Research Commercial Business Analyst
Mark Fisher	Project Team	Technical	Large industrial projects and engineering / mining construction, Project management and financial control	Pumping installation and maintenance programs Research, design & installation of a filtration and recycling plant with 3Ml/day capacity in a highly sensitive environmental area of Sydney water catchment.
Richard Cassels	Legal & Finance Team	Financial	Director of Exhibitions and Publications, and later General Manager of the Queensland Museum South Bank	Environmental compliance, organisational management
Tony Hester	NEV Director Buildings and Infrastructure Team Project Team	Technical	Building – Residential and Commercial construction, Project management, Company and Not For Profit Directorships	Building – Residential and Commercial construction Project management Supervisory experience Team leadership
John Shiel	Legal & Finance Team	Technical	Power Station water structures; management and design of large contracts; water efficiency in buildings; research; Information Technology	Design of canals, bridge piles, settling basins including filtration; managed the construction contract for Eraring Power Station large water tanks; Led specification team for the $20m Mount Piper Site Preparation; conducted energy and water audits for office and industrial buildings.

Name	NEV Role relevant to IPART	Expertise	Dominant Background relevant to water management	Skills and Experience – examples – including water management and construction
Brett Jeffery	Project Team	Technical	Electronics & data communications wired and wireless	Owner and director of Jeffery Electronic Control Pty Ltd. Design, manufacture, commission and post-sale support of irrigation and environmental control systems.
George Gilmour	Insurance Team, Business Support Team Smart Grid Team	Technical	30 years experience in the insurance industry	Insurance and risk management
Matt Lloyd	Plumbing support contractor	Technical	Licensed plumber	Asset management
Mike Crawley	Buildings & Infrastructure Team Land Team	Technical	A background in Electrical Engineering. Degree in Computer Science. A long career in Information Technology specialising in databases and billing systems.	Small scale aquaponics systems requiring water quality management and automation of pumping and irrigation valves achieved by custom designing microcontroller hardware and software
General Administrative and Responsibility Statement				
Stuart King	NEV Company Secretary	Financial	Head of Group Business Strategy, Sydney, National Australia Bank Financial management, Company directorships	Financial management, business strategy, organisational management
Laurence Perrin	NEV Director Legal & Finance Team	Financial	25 years experience in investment funds management	Financial management

2. Detailed Biographies

I. John Talbott – NEV CEO

John Talbott is the CEO of Narara Ecovillage Co-Operative and project team member. He is a registered professional engineer and was Director of Findhorn Ecovillage Project in Scotland for over twenty years. During that time, he pioneered many elements of sustainable community design, infrastructure and building, including a wind farm, ecological waste water treatment plant and many green building techniques and systems.

He is the author of Simply Building Green: A Technical Guide to the Ecological Houses at Findhorn Foundation.

II. Geoff Cameron – Head of NEV Water

Geoff Cameron is the Head of NEV Water. He has a Masters in Applied Science and has experience as Technical Officer with Kraft Foods Ltd. His role there included product and ingredient analysis including water analysis.

He has 40 years experience in the food, biotechnology and IT industries, most recently as IT Manager for a national construction group, a position he held for a period of 10 years. His pervious IT experience includes 6 years as NSW State Manager for a distributor of medical imaging systems. This role involved responsibility for sales and marketing operations. He also has 5 years experience in ERP project management which provides exposure to accounting, billing, inventory and asset management systems across a range of industries.

III. Richard Denham – Director and Head of Legal and Finance Team

Richard Denham is a registered professional engineer with a degree in Natural Resources and has over 25 years of experience in natural resource management within the public sector. This includes 16 years in water resource management and aquatic ecology; 6 years in Crown land policy; and 4 years in Department of Primary Industries policy strategy and reform. His experience includes a comprehensive range of natural resources areas including water resources and water quality management, riverine ecology and geomorphology, soils, land and vegetation management. He has a comprehensive knowledge of the operation of government and of government organisations, including Cabinet and legislative processes, policy development and Commonwealth – State jurisdictional issues.

IV. David Parris – Risk and Audit Committee Lead, Commercial Manager

David is currently responsible for managing the commercial risks associated with the 150 home Narara Ecovillage (NEV) Development and ensuring the development is fully aligned with NEV's financial goals. He specialises in contracts for infrastructure development and assessment of project feasibility.

David's career has been concentrated in the renewable energy field with many years' experience in all aspects of water, hydro-electric, wind and solar projects. His previous role involved the planning, acquisition, development and construction of new generation projects for AGL's Power Development group. The projects include gas fired and renewable generation. In 2009, David investigated leading edge solar projects in the USA and Spain.

His major achievements include researching and implementing the AGL power generation vertical integration strategy and achieving commercial viability for the 420 MW Macarthur Wind Farm in Victoria. He has managed the expansion of AGL's generation portfolio to include wind, solar, gas fired and hydro projects. He has managed the development of a number of large Australian wind energy projects.

David's previous roles have included managing Energy Trading for retail and generating businesses, business development and managing the Operations and Maintenance for a large NSW hydro generation business, corporate development manager, project manager and engineering consultant.

He has qualifications in Corporate Management, Applied Finance, Science and Engineering.

V. David Roberts – Environmental Manager

David Roberts is the Environmental Manager of the Narara Ecovillage project. He also is the Sustainability Projects Coordinator at Willoughby City Council. In this role, he has a focus on water sensitive urban design; management of internal staff and contractors on storm water harvesting for reuse on council ovals.

He has also been a company director of a water tank design and installation company, a Coastcare Facilitator for the Department of Land and Water Conservation and a Support Officer for the Sydney Northern Beaches Catchment Management Committee.

NEV Water

Appendix A5.2(a)

Experience – Retail Supplier

(a) Experience

NEV were the owners and developers for the construction of Stage 1 subdivision civil works including water and sewer infrastructure.

Nev have operated the scheme as network operator and retail supplier since May 2019.

Appendix A5.2(b)

Resumes_CVs for key personnel - Retail Supplier

Retail Manager

Jonathan Ellis

Home **612 9869 8819** Mobile **0438 645367**

Qualifications
Masters of Business Administration, UTS Sydney
Chartered Global Management Accountant (CGMA)
Batchelor of Business, Middlesex University, UK

American Express - 1996 to 2012

1996 - 2000 - Customer Service process management

Joined American Express when it consolidated its Japan/Asia customer service teams in Sydney. Designed and implemented an image and workflow system to enable the reengineering of Merchant Operations processes. Transformed ES Operations (90+ users) from paper based processes to online image based workflow management.

Appointed as Head of Process Management for the merchant and corporate card servicing organisation. Lead a team of business specialists and project managers implementing new computer systems and enhancing customer service processes.

A key achievement was the redesign of receivables processes across J/APA leading to a reduction in receivables, improve dispute resolution and improved operational efficiency. 90 days past due fell from 22.5% to 1.9% within 12 months.

2000 - 2012 - Corporate card - sales effectiveness and business process reengineering

Joined the Corporate Card sales organisation to lead the implementation of a Corporate Purchasing card program. Developed business processes and established a team of 35 implementation managers across Japan, India, Asia and Australia to exploit new business opportunities created by the sales organisation.

During a 10 year period the sales organisation sustained 30% + annual growth rate delivering a quadrupling of the business over 10 years.

The sales effectiveness team expanded during this period to include sales training, legal and contract management, sales reporting, bid management, and post sales customer support. Responsible for leading teams managing these processes across India, Asia and Australia.

In 2009 after the impact of the GFC took over responsibility for business process reengineering. This reengineering team lead a series of initiatives to improve profitability and manage costs as the organisation responded to the changed market conditions.

Credit Union Services (CUSCAL) - 1991 to 1997

General manager for the Commercial IT division which managed the retail banking solution used by over 180 credit unions representing 90% of the credit union industry in Australia. Responsible for all the functions of an external software company including Sales Acquisition and Client management, Systems Development, Software

Quality Assurance, Help Desk and support services and formal training. Full P/L responsibility for a $14m business employing over 130 staff.

Major achievements included establishing a computer service bureau which delivered computer processing in Australia for 50 credit unions. The project involved building a business case for $3 million investment, selling the solution to over 30 independent institutions to outsource their IT systems and then project managing the establishment of the data centre.

Ernst & Young Senior Consultant – 1989 to 1991

Senior member of a large management consulting practice with over 200 professionals covering all aspects of business consulting from strategic planning and business restructuring through to IT systems implementation.

Major achievements included the project management of the implementation commercial accounting systems for large public sector organisations including Sydney Water Board, NSW Department of Water Resources and reengineering processes within NSW Treasury.

Endeavour Credit Union – 1981 to 1988

Successfully project managed the launch of a range of innovative retail banking services including VISA cards, personal cheque books, ATM cards and EFTPOS. Championed the establishment of activity based profitability analysis within the credit union industry. These techniques were used at Endeavour to develop costing models which played a major role in the credit unions strategic planning. Developed a credit risk management rating system based using statistical risk predictive techniques. The system successfully replaced manual credit assessment processes in over 50 credit unions in Australia.

QUALIFICATIONS, AWARDS AND TRAINING

Professional Associations:	Associate of Chartered Institute of Management Accountants (UK) (CIMA) President of the NSW Branch (1994 and 1995)
Awards/Prizes	2004 – Amex Corporate Services Presidents Club award 2000 – Amex J/APA Operations – Making a difference award 2000 – Amex GES International Stars award 1999 – Amex Chairman's award 1998 – CIMA Institute Medal for distinguished service 1981 – CIMA International 3rd Prize – Law and Tax
Interests	Golf, Photography, History
Referees	Available on request

Narara Ecovillage Co-operative Ltd

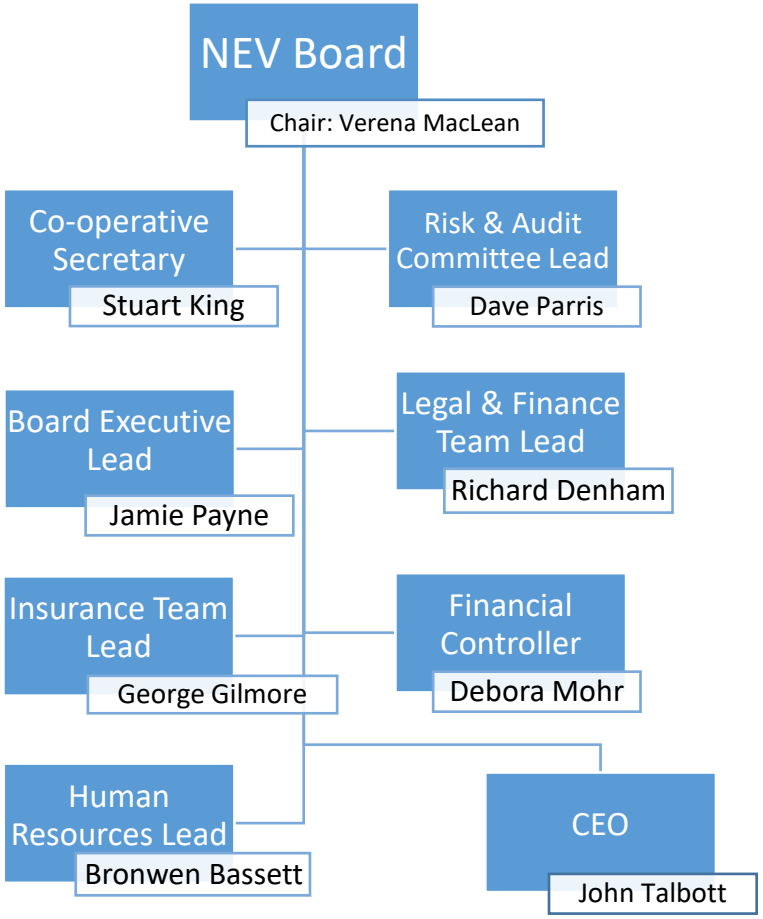
Organisational Structure

December 2020

Narara Ecovillage
Vision, Mission and Aims

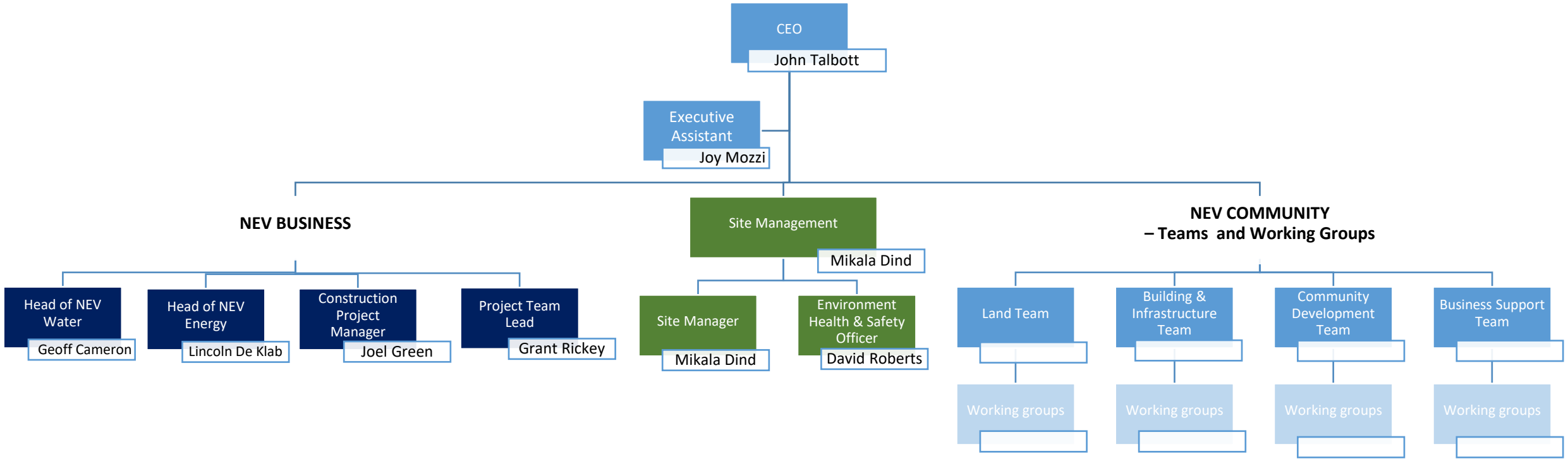
- Our **Vision** is for an environmentally, socially and economically sustainable world
- Our **Mission** is to create a sustainable ecovillage as a demonstration of this vision
- Our **Aim** is to research, design and build a stylish, inter-generational, friendly demonstration ecovillage at Narara, blending the principles of ecological and social sustainability, good health, business, caring and other options that may evolve for our well being.

Narara Ecovillage Co-operative Organisational Structure



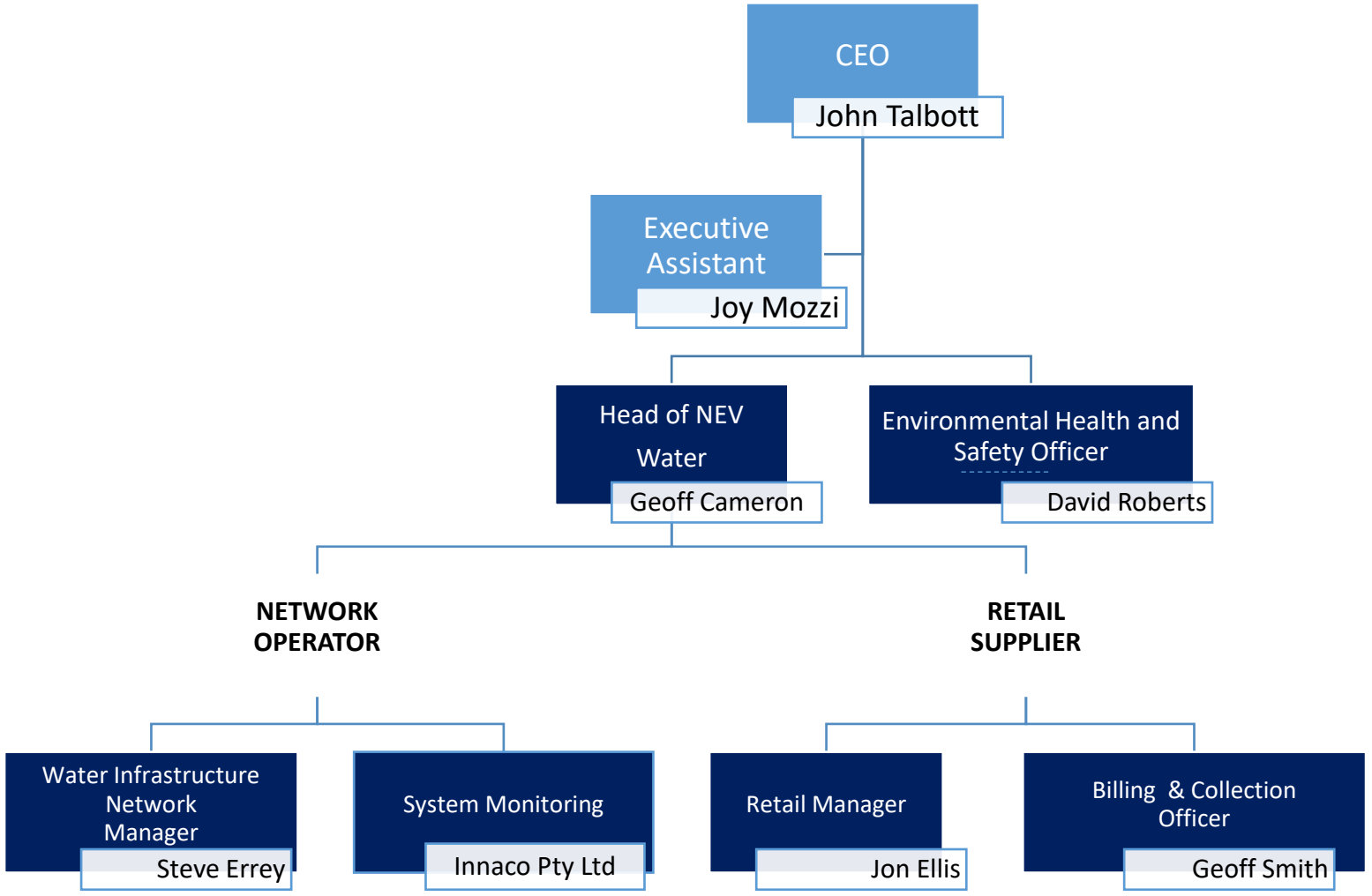
December 2020

Narara Ecovillage Project Organisational Structure

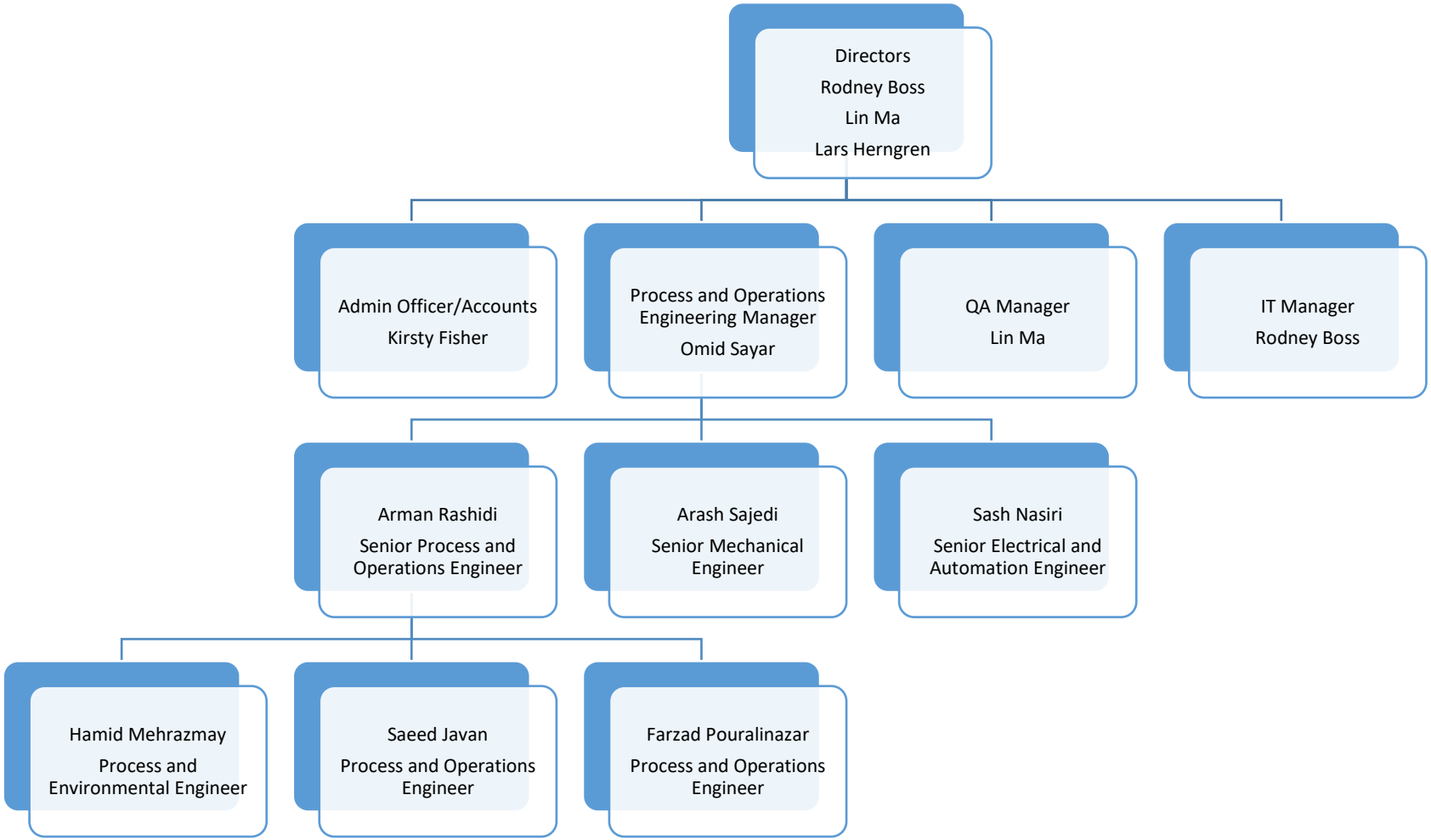


December 2020

Organisational Structure
NEV Water



December 2020


Directors
Rodney Boss
Lin Ma
Lars Herngren
Admin Officer/Accounts
Kirsty Fisher
Process and Operations Engineering Manager
Omid Sayar
QA Manager
Lin Ma
IT Manager
Rodney Boss
Arman Rashidi
Senior Process and Operations Engineer
Arash Sajedi
Senior Mechanical Engineer
Sash Nasiri
Senior Electrical and Automation Engineer
Hamid Mehrazmay
Process and Environmental Engineer
Saeed Javan
Process and Operations Engineer
Farzad Pouralinazar
Process and Operations Engineer