

CLEARPRO
construction water solutions™



NPE
NATIONAL PUMP & ENERGY™



TRUSTED WATER TREATMENT SPECIALISTS

Proven capability in delivering tailored, high-performance water treatment systems for construction, mining and industrial applications.

INTEGRATED WATER TREATMENT CAPABILITY

NPE has significant proven capability in the specialised area of water treatment which has been recently bolstered by the acquisition of Clearpro which brings additional expertise and specialised equipment to the organisation. The following key services:

- Groundwater Remediation
- PFAS Treatment
- Hydrocarbon removal
- Metals Removal
- pH Correction
- Chemical Dosing
- Sludge Processing
- Effluent Management
- Environmental Monitoring and Reporting (including automated systems)
- Research and Development

What we can offer

The NPE team initially conducts water quality testing using both field and laboratory techniques depending on the application. This analysis is used to gather an understanding of the groundwater quality, characteristics and composition to determine a suitable treatment method.

Along with water quality testing, NPE will review any relevant geotechnical reports, conduct internal soil investigations and perform onsite test spearing if required to determine the most suitable extraction method and design an effective and feasible water treatment solution. This tailored solution is implemented to meet the required environmental legislation, the clients' goals, budget and time frame.

When engaged on a project, we take full ownership of the works contracted. We are dedicated to providing water management solutions and are continuously improving and developing new industry leading wastewater and groundwater management methodologies and technology.

“The water treatment process provided by NPE is a unique system that ensured John Holland complied with the strict environmental guidelines outlined by the Department of Environment Regulation. Furthermore the 24/7 monitoring and maintenance, effective communication and quality workmanship provided the Kings Square project management team with timely, accurate and consistent results.”

Project Manager
John Holland Group | KS1



Comprehensive Water Management Expertise

NPE delivers integrated water treatment solutions across groundwater and wastewater applications, including remediation, PFAS treatment, hydrocarbon removal, metals reduction, pH correction, chemical dosing, sludge processing and effluent management.

Our team combines field and lab testing, geotechnical review and onsite investigations to design tailored, compliant and cost-effective treatment strategies. NPE takes full ownership of delivery, supported by automated monitoring and ongoing innovation in groundwater and wastewater management.



GROUNDWATER REMEDiation

The principal objective of groundwater remediation at any site is to remove the waste material/free product and/or reduce the concentration of contaminants in the soil and/or groundwater to specific land use acceptable levels.

NPE will evaluate the various remedial alternatives for the client's site-specific goals and objectives. NPE will consider the following items when determining a tailored remediation solution:

- Human health risk and protection of human health
- Environmental Risk and protection of the environment
- The technical feasibility to conduct the remediation
- The extent of contamination
- Projected contamination removal, treatment rates and treatment volumes
- Space limitations and footprint requirements
- Project time frames
- Economical waste transport and disposal options
- Ongoing operations and maintenance costs
- Ease of technology application and implementation

Viable remedial technology is compared using some or all of the above criteria when determining the most cost-efficient and effective application for each site.



Benefits of Groundwater Remediation and Treatment

Treating water extracted from Acid Sulphate Soil prior to discharge removes hazardous exposure risks of iron sulphides being released into waterways which may have the potential to kill aquatic life and threaten biodiversity. Increases water availability for commercial and environmental uses.

Treatment prior to discharge/recharge significantly improves water quality which benefits the sustainability of surrounding aquifers and waterways.

Treated water can be recycled for project construction use e.g. dust suppression. Effective treatment may provide additional discharge options when applying for discharge licences.





HYDROCARBON REMOVAL SOLUTIONS

Removal of Hydrocarbons must be considered when sites have historical exposure to petroleum-based products and other organic compounds. Hydrocarbon removal systems can be installed as a plug-and-play system or can be specifically designed for the requirements of the project. Oil is chemically bonded and will never be released back into the water streams.

Key Features Include:

- Removes hydrocarbons, Colloidal Heavy Metals, Organic Polymers and Persistent Organic Pollutants
- The filter system is rated at 10 L/s, up to a maximum total flow of 20 L/s, depending on system configuration
- Capable of single pass reductions up to 99% single-pass efficiency and will not release the pollutants back into the water





PFAS TREATMENT

NPE/Clearpro provides scalable PFAS treatment using proven Best Available Treatment (BAT) technologies, including granular activated carbon (GAC) and ion exchange resins. Treatment trains are tailored to water quality, PFAS profile, flow rate and discharge requirements.

Systems can include primary treatment, multimedia filtration, GAC adsorption and resin polishing to reduce media loading, improve removal efficiency and extend media life.

Small column testing or pilot trials can be completed before mobilisation to confirm feasibility, media selection, bed volumes and expected media life.

NPE's Key Considerations:

- Discharge compliance and environmental protection
- PFAS profile, water chemistry and competing contaminants
- GAC/resin media selection and treatment configuration
- Primary treatment and multimedia filtration requirements
- Column testing/pilot trials before mobilisation
- Bed volumes, media life and change-out planning
- Flow rate, footprint, mobility and scalability
- Spent media handling, disposal and lifecycle cost





CHEMICAL DOSING UNIT

NPE's Chemical Dosing Units provide automated pH correction for groundwater with high or low pH, elevated Total Titrable Acid (TTA), or contaminants such as Possible Acid Sulphate Soil (PASS), ammonia and nitrogen oxides. Units can be custom-built to suit project requirements and can process up to 60 L/s.

Compact, solar-powered and remotely monitored, CDU's offer a small footprint while delivering reliable, high-volume treatment performance.

Chemicals

NPE supplies a full range of water treatment chemicals at competitive rates, delivered using compliant equipment. All chemicals are risk-assessed, supplied with SDS, and stored in secure, labelled, banded IBC's.

Our team assists clients in selecting the most effective chemical options to achieve treatment goals while minimising consumption and cost.

CDU Key Features:

- Automated chemical dosing for accurate pH correction
- Remote monitoring and adjustment via web-based access
- Insulated and ventilated design for stable operation
- Bunded chemical storage for compliant containment
- Safety equipment including eyewash and PPE
- Solar-powered operation
- Self-contained and portable
- 24/7 alarm monitoring
- Custom-built configurations for project-specific needs
- Easy-adjust pH dosing
- Fully lockable for secure site operation



CLARIFIERS

NPE provides a comprehensive range of water clarification systems designed to accelerate the settlement of suspended solids in sediment-impacted or process-affected water. Our fleet includes multiple clarifier formats and capacities, allowing projects to select the most suitable solution based on flow rate, water chemistry, site footprint and operational requirements.

Across the range, NPE clarifiers support applications such as silt removal, sand separation, and the reduction of fine suspended particles through enhanced settling technologies. Many units also integrate automated dosing, remote monitoring, and safety features to support efficient and compliant site operation.

Applications and Selection Considerations

NPE clarifiers are suited to a wide range of dewatering, construction, mining and wastewater applications. Selection is typically guided by:

- Flow rate requirements
- Influent water quality, including suspended solids and dissolved contaminants
- Available site footprint
- Chemical dosing needs
- Operational preferences, such as automation, telemetry, or off-grid capability

“The team's vast knowledge of the dewatering system on site was invaluable to the successful management of the water on this complicated project.”

Project Manager
Pindan Construction
Rosewood Age Care



How NPE Clarifiers Work

Most NPE systems utilise a lamella or inclined-plate process to maximise settling efficiency:

- Influent flow enters the clarifier and moves upward across inclined plates, increasing the effective settling area.
- Flocculant or polymer dosing may be applied-either via slow-release blocks or automated dosing-depending on influent quality.
- Settled solids slide down the plates into a sludge collection zone for periodic removal.
- Clarified water rises to the outlet chamber for discharge or further treatment.

This process enables rapid settlement of suspended particles, improving water clarity and supporting compliance with environmental discharge standards.





SAND TRAPS AND MUD GRUBBERS

Our range of Sand Traps and Mud Grubbers is designed to significantly speed up the settling time for sediment impacted water. A range of capacities is available to select from depending on the application. Sand Traps and Mud Grubbers are built with separate compartments separated by sandwich panels. This allows settlement time and then clean water to decant into the next compartment until reaching the outlet chamber.

Mud Grubber 6000 Specs

- Dimensions (LxWxH) mm 3500(L) x 1600(W) x 1700(H)
- Capacity 6000L
- Empty Weight 1100 kg
- Full Weight (Water) 7800 kg
- Maximum lift mass 1100 kg
- Minimum no. of slings 4
- Max. internal sling angle 60 degrees between any two slings





METALS REMOVAL MODULE (MRM)

NPE provides advanced metals-removal systems for treating groundwater and process water with elevated iron and other dissolved metals. These systems produce high-quality water suitable for aquifer reinjection or compliant stormwater discharge.

Our Metals Removal Modules target contaminants such as iron, manganese, zinc, arsenic and other heavy metals. Standard units treat around 15 L/s, with customisation available based on water analysis and project requirements.

NPE MRM's support projects needing:

- Strict discharge compliance
- Heavy-metal reduction
- High-volume dewatering
- Integration with clarifiers and other treatment modules
- Custom solutions for limited space or challenging water chemistry

All systems are built to Australian Standards for durability, safety and long-term performance.

“ Meeting the environmental legislation in water treatment and disposal has made dewatering projects more challenging for project managers and developers. NPE are the leaders in the provision of effective, customised and reliable solutions that not only meet but often exceed legislative requirements. ”

How NPE Metals Removal Systems Work

MRMs operate as part of an integrated treatment train, often working alongside clarifiers, settlement tanks and aeration modules. The treatment process typically includes:

- Oxidation and aeration to convert dissolved metals into particulate form
- Chemical dosing to optimise pH and enhance metal precipitation
- Filtration and backwash cycles to remove accumulated solids
- Automated control systems that maintain stable treatment conditions
- Sludge management through connected settlement or clarification units

This approach has been proven to reduce iron concentrations to ≤ 0.3 mg/L and effectively treat corrosive or highly mineralised groundwater.

Typical System Parameters

- Footprint: $\sim 6 \text{ m} \times 3 \text{ m}$
- Height: $\sim 2.7 \text{ m}$
- Gross weight: $\sim 15,000 \text{ kg}$
- Optimum flow rate: $\sim 15 \text{ L/s}$
- Power supply: 32 A, 3-phase
- Chemical capacity: up to 800 L
- Bund capacity: up to 1,000 L





EFFLUENT MANAGEMENT

NPE specialises in the consistent delivery of improved groundwater treatment technology and continues with the effective and efficient management and disposal of effluent – a by-product of the extracted water treatment process. One of our underlying principles is to deliver sustainable practices that are environmentally sound in theory as well as in practice.

NPE invested more than two (2) years of research and development resulting in an effluent processing solution that can now be completed onsite. The effluent produced, also known as liquid sludge, was previously removed from the project site for processing and disposal which incurred additional transportation and scheduling costs. The benefits of this research and development are an environmentally effective process that maintains an economically viable operation which in turn benefits the client's bottom line.

“Grateful to have been involved in the new technology and innovation invested into this project by your company regarding the sludge disposal system. It gave your company a competitive advantage at the start of the project and I look forward to seeing this technology used and refined on future projects.”

Commercial Manager
City Busport Alliance
Perth Busport

Sludge Processing

The Sludge Processing Unit (SPU) is the tool used by NPE within the effluent management system. The press maximises the amount of water recovered from the liquid sludge, significantly reducing the volume of sludge and converting all liquid waste into a spreadable form that is then classified as solid waste for offsite disposal.

The SPU is custom designed and built to site-specific requirements and is suitable for various applications.



MONITORING & REPORTING

Monitoring of the water treatment system is completed on several levels. The operational systems can be controlled remotely using remote connectivity software which enables functions such as pH adjustment, turning the system on an off as well as the implementation of incremental operational adjustments. Both the MRMs and CC are equipped with water and pH level alarms as well as a flow rate alarm system that monitors any overflows or emergencies such as power outages. Our systems are monitored 24/7 with teams rotated through a rostered call-out schedule which allows emergencies to be identified and attended to immediately.

NPE has the ability and authority to provide environmental compliance reports as required. This ensures our clients are constantly across the performance of the water treatment system and the alliance with their legislative deliverables. Depending on the client's requirements, data such as discharge rates, drawdown rates, chemical usage, pre and post water test results as well as baseline monitoring can be collected by our team. Information collected is extrapolated into an in-house reporting system and submitted to the client. A web-based geotechnical instrumentation monitoring system that monitors drawdown requirements and discharge rates is also used as required.



Environmental Monitoring

NPE can deliver an extensive water quality monitoring program with services including laboratory sampling, field monitoring, and compliance reporting.

The program is designed to provide the client with the confidence to make informed decisions based on collected analytical data. Most importantly, the results offer the client documented evidence of environmental compliance.

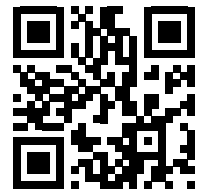
Testing is done on-site and samples are also sent to NATA certified laboratories for third party confirmatory testing and reporting.





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National Pump & Energy branch network is strategically positioned to service all parts of Australia. These hire branches are supported by a team of NPE representatives and field service crews so that every part of Australia has access to the best equipment and service, regardless of location.

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