



JOHN NITSCHKE DRILLING
DRILLING CONTRACTORS
MINERAL EXPLORATION & WATER WELL SPECIALISTS

THE BUSINESS OF
DRILLING FOR WATER

If it's there, we'll find it!



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Mother Nature holds on to its secrets...
until technology and human skill
helps to unearth it.

The knowledge of how to drill
beneath the surface of the earth is a
growing tradition for the

Nitschke family
of Hahndorf,
South Australia.



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background

JOHN NITSCHKE DRILLING DRILLING CONTRACTORS MINERAL EXPLORATION & WATER WELL SPECIALISTS

OUR BACKGROUND

John Nitschke Drilling has been providing the Mining, Exploration and Waterwell Industries with professional and comprehensive drilling services since 1962.

JND has exploration rigs working on major mining sites across several States.

But, for the Nitschke family, drilling for precious ore is just as important as drilling for life-sustaining water in the Adelaide Hills and on the Adelaide Plains.



Jonathan (left) and John Nitschke



drilling

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DRILLING FOR WATER

This document will help potential clients understand the practical processes involved in searching for underground water in South Australia. The process is not simple!

Our company wants clients to fully understand the process — and once provided with this detail, we don't mind being asked informed questions when we are preparing to drill for water on your property. You are the client... and we will work together.

To protect the environment there are strict Government controls on drilling — be it for water or for minerals.



environment

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OUR ENVIRONMENTAL COMMITMENT

As a modern company with a defined Environment Policy, **JND** works with nature to add value to the lives and property of our clients.

When we drill in your backyard, no matter how large it is, we commit to minimising any impact on you — or your neighbours.





skills

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OUR SKILLS

John Nitschke Drilling has been providing the Mining, Exploration and Waterwell Industries with a professional and comprehensive drilling service since 1962.

John Nitschke Drilling is a family owned and operated company made up of experienced and professional personnel. John Nitschke, who has more than 40 years experience in all types of drilling, formed the company in 1962.

Today Jonathan Nitschke, who has more than 14 years drilling experience manages the company, allowing his father to become more involved in development of rig technology.





skills

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JND is the only drilling contractor in South Australia to have long term contracts with all three of the major commercial mines in South Australia. We work for BHP Long Products Division at Whyalla, for NRG Flinders Ltd at Leigh Creek and WMC at Olympic Dam.

Contracts like these are only won and held by continuous commitment to quality, safety and performance. This standard applies to any work.

Our company operates the most modern and technically advanced fleet of drilling rigs in South Australia, carrying out some

of the most technically difficult drilling projects in the industry today.

We can meet your objectives and exceed your expectations in every facet of your drilling requirements.




JND have the capacity and expertise to drill 6 to 24 inch diameter rotary bores to depths of 1200 metres, 5.5 inch diameter reverse circulation to depths of 600 meters and NQ2 core to 1500 metres.

All terrain all-wheel-drive vehicles can get our equipment to the most difficult and remote sites to carry out drilling projects.

DRILLING FOR WATER... AND THE RISKS

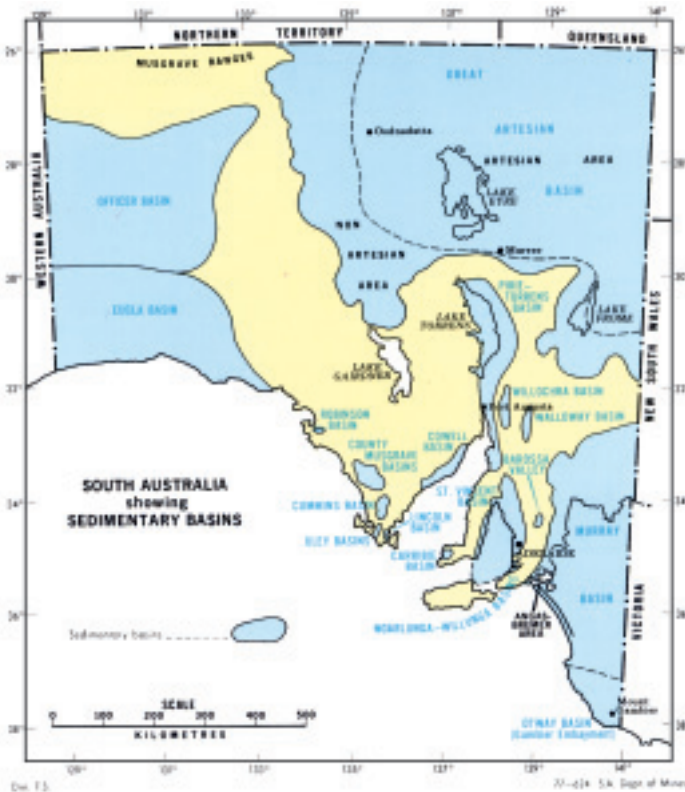
Drilling for water or minerals has always carried a risk factor.

Anyone contemplating a water bore must consider the following factors:

-  Will I get water of sufficient quality and quantity for my needs;
-  What drilling methods should be used to construct the well; and
-  How much will it cost.

These risk factors can be managed and reduced by careful thought, planning and research.

Our company will assist you in reducing the risk factors and obtaining that all-important element... **water!**





topics

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This presentation is designed to help our clients by showing them what is required to drill a water well and to explain where the water comes from and how to obtain this most valuable resource at the best possible price.

Topics covered include:

Underground Water

The hydrological cycle

Water resources act

Permit for Well Construction

Licensed Well Drillers

Licensing requirements for drilling contractors

Water well survey

Water assessment report

Site Selection

Free no obligation site inspection

Well Construction

Construction Standards

Well Development

Air lift testing

Well results

Well capacity testing, salinity testing and construction details

Pumps

Recommend pump requirements



underground

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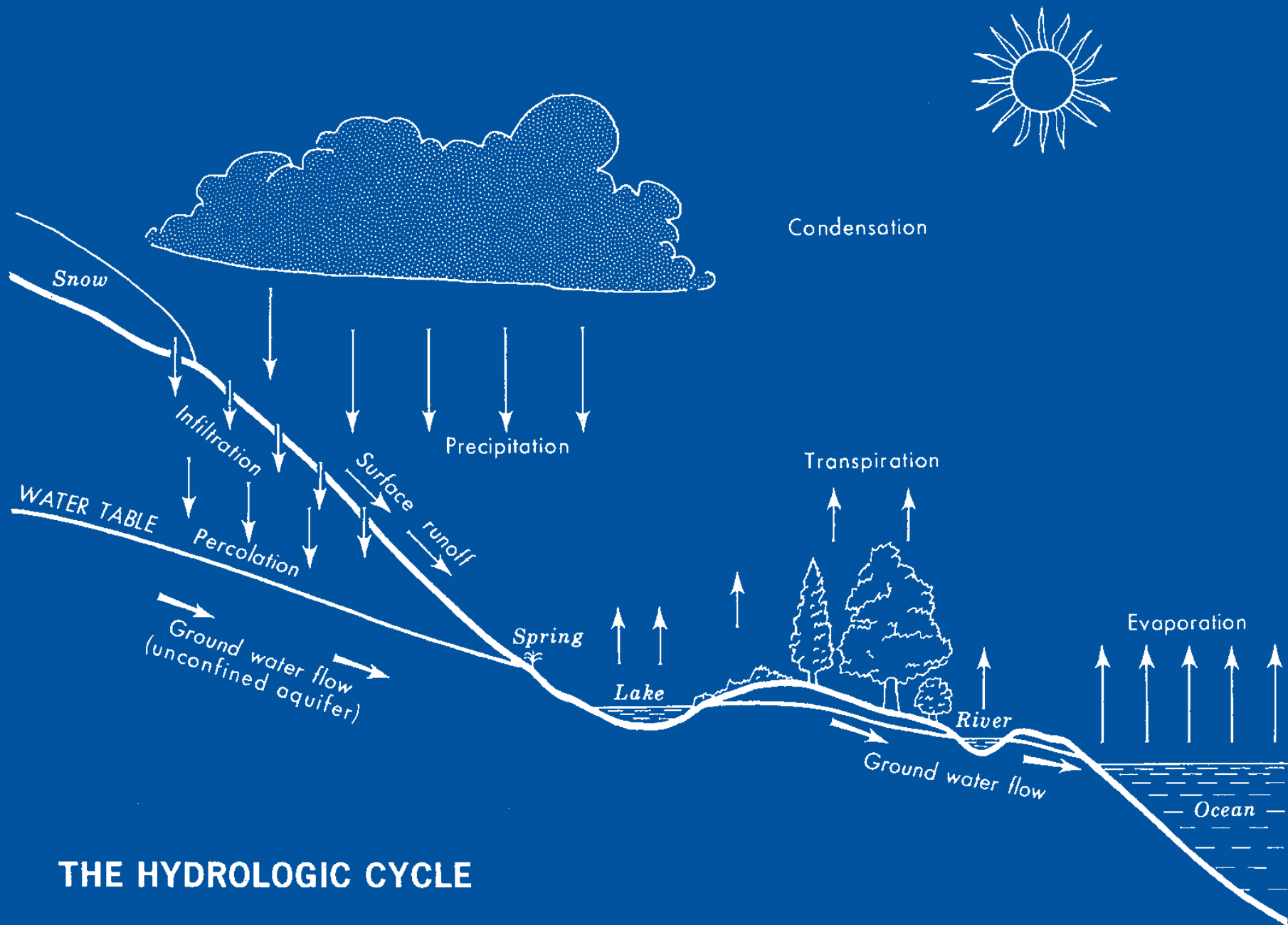
UNDERGROUND WATER

In simple terms underground water is described as water occurring at various depths below the surface. Although there are different types of underground water the most common is derived from rainfall and is constantly being recharged, dependent on the rainfall in that area. The underground area where water is found is known as an aquifer.

Aquifers can generally be divided into three categories.

Unconsolidated Sediments include alluvial sand or gravel beds and wind blown sands. These can be important sources of underground water in some areas such as shallow sedimentary basins, valley fill and outwash deposits of the Mount Lofty Ranges.

Sedimentary Rocks, which have been formed by the consolidation of sediments, occur in the larger sedimentary basins. They form extensive aquifers containing very large volumes of underground water in storage.



THE HYDROLOGIC CYCLE



underground

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Fractured Rocks occurring mainly in the Mount Lofty, Flinders and Musgrave Ranges and on Kangaroo Island provide significant supplies of underground water. Yields from wells vary widely, depending on the size, extent and frequency of fractures.

Water resources act — permit

The act states that a Licensed Driller is required for work on all water wells deeper than 2.5 meters, and that a permit be obtained prior to the commencement of work.

Permit applications can be obtained from the Department of Environment and Natural Resources or through

John Nitschke Drilling who can assist you in preparing the permit application form.

A Government lodgement fee applies for each permit application.



licensed

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**NEED
WATER**

If it's
there
we'll
find it!

.....
DOMESTIC
.....
FARM
.....
FACTORY
.....
BUSHFIRE
.....

Save on Water Rates
Free Assessment and Quote
Government Approved
Environment Protection Policy

JND

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AWARD WINNING SAFETY STANDARDS

LICENSED WELL DRILLERS

John Nitschke Drilling has an experienced team of drillers, whose skills and knowledge ensure safe efficient and productive field operations.

Our drillers are highly trained individuals who have Nationally Accredited Drillers Licences.

John and Jonathan Nitschke have National Class 3 Licences and have a combined drilling experience of over 54 years.



Survey

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WATER WELL SURVEY AND RESEARCH

Local knowledge and experience can tell us a lot about the potential for finding water in your vicinity.

This involves the collection of all available information on existing water wells in your area from a national database.

JND conducts site-specific water well surveys for all our clients.

The information details existing well results which including well yield, water salinity, standing water level, well location and well depth.

This is combined with data from geological maps, showing the specific rock types in various areas.

With years of data from jobs in most areas, as well as a personal approach, we are ready to talk to 'the locals' who are a mine of knowledge about water issues in neighbouring properties.



WATER ASSESSMENT REPORT

This vital research enables us to produce a Water Assessment Report, which helps us to reduce and manage the risk factors associated with drilling a new well.

Careful planning and research will enable us to answer your number one question...

- 💧 Will I get water of sufficient quality and quantity for my needs?
- 💧 What drilling methods should be used to construct the well?
- 💧 How much will it cost?



site selection

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SITE SELECTION

Prior to inspecting the site, the water assessment report is compiled.



This report shows all known bores in your area, detailing depth, supply and salinity. A map of all bores in your area is provided along with a bore hole data sheet. This information allows an accurate assessment of the underground water in your area and what type of construction and drilling method are required.

JND will undertake a free no obligation site inspection and discuss the results of the water assessment report, to ensure that our clients are informed about the groundwater in their area.

There are many factors that need to be taken into consideration to select a suitable site to construct water well.



The client should advise the driller if there are any underground or overhead services in the area of the proposed drill site.

-  The position of the bore should be based on the best prospects for obtaining a successful supply and on working convenience.
-  The bore site should allow ready access for heavy machinery for drilling and subsequent servicing of the bore and pumping equipment.

Permit rules

Well permits may require that a bore should be located not less than a specified distance from a property boundary and/or from a bore on a neighbouring property, channel, stream, or source of pollution such as a septic tank.

This requirement is to minimise the possibility of interfering with the flow and water levels in nearby bores.



construction

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WELL CONSTRUCTION

This is controlled by a General Specification document designed to protect the consumer, and to ensure that certain minimum standards of construction are maintained.

John Nitschke Drilling guarantees the construction of our wells for six months after completion.

Important aspects of well construction:

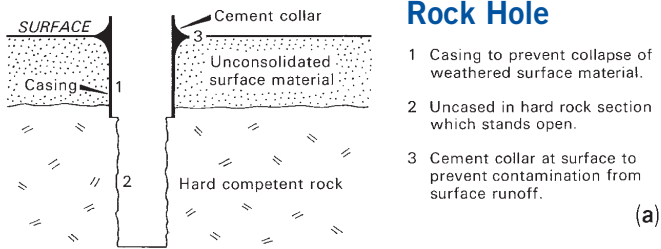
Casings and Screens

Adequate lengths of casing must be used to prevent collapse of the well and pollution by surface run off. Where a major

corrosion problem is known to exist then casing should be of inert material such as PVC or fibreglass (FRP) pipe. In loose sand, wire screens of stainless steel or slotted casing should be used with a gravel pack.

Headworks

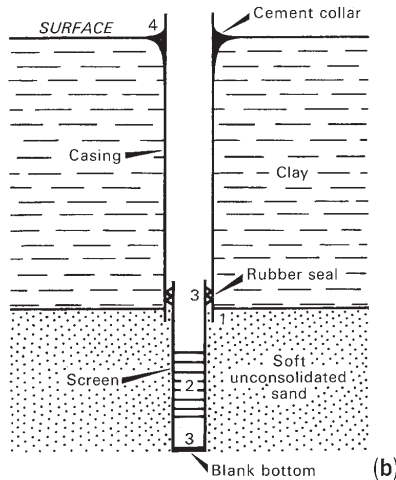
Completed wells must be capped in such a manner that undesirable surface material cannot enter the well. Where the well is artesian, headworks must be designed to prevent the water running to waste when not in use.



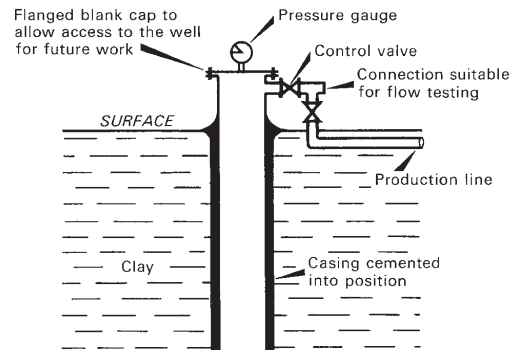
Pressure cemented screened bore

- 1 Casing into the top of sand aquifer to prevent hole collapse.
- 2 Stainless steel sand screen in the unconsolidated sand aquifer.
- 3 Screen with blank bottom and rubber seals to casing so all water entering the hole must be through the screen.
- 4 Cement collar at surface.

Note: Casing may be either steel, P.V.C. or F.R.P.



Pressure cemented screened bore



S.A. Department of Mines and Energy

CEMENTING

This is used in well construction to provide a seal between the casing and the walls of the hole, preventing polluted surface water from entering the well between the hole wall and the casing.

In many areas it is essential that the casing be properly cemented in the well over its entire length. This protects the casing from corrosion and prevents contamination of a fresh water aquifer by an overlying saline one. It can also prevent loss of fresh pressure water by upward leaking behind the casing.

Diagram courtesy



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development

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WELL DEVELOPMENT

Well development involves the process of cleaning out the well after the completion of drilling. Compressed air is used and this increases the permeability of adjacent aquifer material so that water can flow freely through it. It also stabilises sands around screened wells so that water pumped from the well is free of sand.

Development is essential to the proper completion of every water well.

Proper testing of a well is also essential to its efficient operation and is the only sound basis for selection of a suitable pump. High pumping costs and unsatisfactory pump performance can often be traced to the selection of an inappropriate pump. It is recommended that the

Photo courtesy



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development

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driller or pump supplier carry out the well test immediately after construction and development of the well.

At the completion of each well **John Nitschke Drilling** 'air lift' the well to ensure that the well is fully developed and that the water supply is clean and free of suspended solids or rock chips.





results

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The range of salinity of natural waters is shown below

Sea Water	35000 – 40000 mg/L
Precipitation (rain & snow)	3 – 60 mg/L
Fresh Water Lakes	20 – 1000 mg/L
Saline Lakes	1000 – 400000 mg/L
Fresh Underground Water	100 – 1000 mg/L
Saline Underground Water	1000 – 350000 mg/L
Fossil Underground Water	100 – 350000 mg/L

*Chart courtesy Department of Mines and Energy
"Groundwater in South Australia"*

WELL RESULTS – A FULL REPORT

During well development our team will conduct water flow tests to calculate the yield of the well at various depths. Salinity tests are also conducted to determine the suitability of the water.

On completion of the well the standing water level and total hole depth are also recorded. All this information is then collected and compiled in a detailed well construction report, which is given to the client.

This information is vital when selecting the correct pump to suit your well. A copy of this information and a water sample is also sent to the Department of Water Resources.



pumps

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PUMPS

John Nitschke Drilling can supply and assist in pump selection and recommend suitable contractors to equip your well.

Nitschke Drilling Wins Safety Award

This article appeared in 'Australasian Drilling May/June 2000', page 55.

John Nitschke Drilling has won an Occupational Health and Safety Innovation award for the design, manufacture and installation of an automated drill rod handling system.

The JND drill rod handling system allows 150 metres of drill rods to be carried on the rig in a fully hydraulically operated drill box which is raised into the vertical position when in use. A mechanical winch is used to move the drill rods in and out of the upright drill box and allows each rod to be connected and disconnected with no manual handling. The award was made by the SA Chamber of Mines & Energy, and the Mining & Quarrying OH&S Committee.

John Nitschke Drilling is based at Hahndorf in the Adelaide Hills, South Australia. John Nitschke started the business in 1962 and was a pioneer in the development of rotary percussion drilling in Australia. Since then the company has undergone planned and steady growth, and currently operates what it proudly claims is the most modern and technically advanced fleet of drilling rigs in South Australia.

John Nitschke Drilling has lead the way in the development of innovative drilling equipment with advanced safety features. The company operates a large engineering workshop, which enables research and development to be carried out on an ongoing basis. All rigs are fitted with automated rod handling systems, automated sampling units and RC safety fuses.

John Nitschke Drilling have the capacity and expertise to drill 6 to 24 inch diameter rotary to depths of 1200 metres, 5.5 inch diameter reverse circulation to depths of 600 meters and NQ2 core to 1500 meters. All-terrain, all-wheel-drive vehicles can get equipment to the most difficult and remote sites to carry out drilling projects.

The company is the only drilling contractor in South Australia to have long-term contracts with two of the three major operating mines in South Australia. This includes a Preferred Supplier Agreement with BHP Long Products Division drilling iron ore near Whyalla and the company has held this agreement since 1995. The company also has a long term contract with Flinders Power Ltd to service all their drilling requirements at the Leigh Creek Coalfields.

John Nitschke Drilling is committed to continuous improvement and industry best practice. Their prime objective is to provide a high quality, diverse, innovative and reliable contract drilling service to all sectors of industry.

Key Personnel

Managing Director: John Nitschke

John Nitschke has been involved in the drilling industry since 1962 when he formed Dolnit Ltd, which specialised in waterbore drilling. In 1965 he formed Nitschke Drilling P/L and expanded into mineral exploration specialising in rotary percussion and core drilling. In 1980 John Nitschke Drilling Pty. Ltd. was formed and became a leader in high pressure hammer drilling. The companies continued growth and development, and its technical and operational excellence is mainly due to the leadership, accumulated knowledge and experience of John Nitschke.

Manager: Jonathan Nitschke has been involved in the drilling industry since 1988. He has a Diploma in Business Management from Adelaide University and has completed many management and leadership courses. He has extensive experience in all sectors and in all types of drilling operations.

Company Secretary: Lyn Nitschke has been involved in the drilling industry since 1967 and has helped John mould the company into its current form. Lyn is a Company Director and responsible for the administrative functions of the company.

Safety

John Nitschke Drilling has written work procedures and undertakes Job Safety Analysis for every drilling project to identify hazards and prevent injury. Internal safety, equipment and maintenance audits are also conducted to ensure the safe and efficient operation of the drilling program.

Quality Management

John Nitschke Drilling is currently implementing a Quality Business Management System that meets the requirements of the N.A.T.A. Q-Base Code.

The quality and reliability of the company's drilling operations and associated services are the concern of every person within the organisation.

Training and Development

John Nitschke Drilling believes that its employees are one of its most valuable



Jonathan Nitschke (left) with father John, at the presentation ceremony (Photo courtesy Festival City Photography)

resources. Safe efficient and effective drilling operations depend on competent trained personnel. The company provides employees with the opportunity to increase their technical proficiency and promotional prospects by attaining higher level technical, OH&S, and management knowledge, qualifications and skills.

Training and development needs are met through a combination of on and off the job training; formal courses and attendance at industry based programs.

All employees under go Initial Induction Programs. Selected individuals may enrol in drilling industry-training courses.

Supervisory/Management courses include: first aid, advanced technical and OH&S training conducted by recognised training organisations, industry associations and equipment suppliers.

John Nitschke Drilling can be contacted at:

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contact

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A.B.N. 12007 926 927

SUMMARY

John Nitschke Drilling

are the drilling professionals.

If you want a sustainable water supply that will add capital value to your property call Jonathan Nitschke.

CONTACT DETAILS

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