Water Well Driller's Licencing handbook

Department of Natural Resources and Environment Tasmania

Tasmanian Government

Introduction

The Department of Natural Resources and Environment Tasmania (NRE Tas) has the responsibility for the management and protection of Tasmania's water resources. As part of that responsibility NRE Tas manages driller's licences for work involving the access and use of groundwater.

The objective of the licensing system is to protect groundwater resources by ensuring that all water well drillers are properly skilled and their work meets minimum standards. As the licensing system is based on a national system there are certain requirements and standards that need to be met in order to gain a licence.

This handbook explains how the system works, how it is administered under the *Water Management Act 1999* and what is required in terms of skills, qualifications and experience to initially obtain or upgrade a driller's licence.

Departmental role

The Department is responsible for administering the *Water Management Act 1999* which provides a framework for the allocation and management of Tasmania's Water resources. The Act allows for the management of bore construction where bores are drilled for water related purposes, and includes the licensing of drillers.

This means NRE Tas is responsible for:

- Ensuring only licensed water well drillers construct water wells in Tasmania; and
- Ensuring that only those drillers who can demonstrate the required standard are licensed.

Who must have a Well Drillers Licence?

All water wells deeper than 3 meters must be constructed by, or under the supervision of, a licensed water well driller who has the correct endorsements on their licence for the drilling method in use.

This means a suitably licensed driller needs to be on site while the work is being undertaken. It is acceptable that a driller of a lower class or an offsider may operate a rig as long as a licensed driller is on-site and available to provide direction, or take over the work if required.

The licensed driller on-site remains responsible for the work at all time – whether operating the rig or not. This approach allows the less qualified driller to gain experience and training on the job.

Drilling activities that must be performed or supervised by a licensed water bore driller include but are not limited to:

- Drilling, plugging, backfilling or sealing of a water well;
- Deepening, enlarging or casing a water well;
- Repairing, replacing or altering the casing, lining or screen of a water well;

Petroleum, Gas, Geothermal and mineral exploration drillers

Mineral exploration, petroleum, geothermal and gas bores do not need to be permitted under the *Water Management Act 1999.* These drilling types are managed under the *Mineral Resources Development Act 1995* and *Environmental Management and Pollution Control Act 1994*. Mineral Resources Tasmania (MRT) manage works approvals associated with this drilling sector and use a Mineral Exploration Code of Practice.

Mineral exploration bores, petroleum wells and geothermal wells cannot however be converted to permanent monitoring, observation or water supply bores unless this work is done by, or supervised by, a licensed water bore driller.

Drillers operating on petroleum, geothermal or mining tenements should find out from their employer, Mineral Resources Tasmania and the EPA, about the relevant requirements for exploration, petroleum, gas and geothermal drilling, before proceeding with any such work.

Geotechnical and contaminated site drillers

Any work where access to groundwater is the objective, and results in the completion of a cased groundwater monitoring or extraction well, does require a licensed water well driller to undertake the work.

Contaminated site drillers also need to be aware of any requirements under the *Environmental Management and Pollution Control Act 1994* that may apply to drilling on a contaminated site.

Interstate Drillers

Under the Mutual Recognition Act 1992 (Cwlth), Well Driller licence holders can now be recognized through the Automatic Mutual Recognition (AMR) scheme between participating jurisdictions. This means you may be automatically 'deemed to be registered' in Tasmania to carry out the activities covered by your interstate licence, without further assessment of your suitability, or the payment of fees, provided you:

- Hold a licence in another state or territory who is also participating in the AMR Scheme; and
- Meet the requirements for Automatic Deemed Registration; and
- Notify the Tasmanian Local Registration Authority of you intention to carry out the authorized activity.

Tasmania is currently automatically recognizing the activities covered by an occupational licence for a Well Driller from jurisdictions who are participating in AMR. To be automatically recognized you will need to notify NRE Tas of you intention to have your interstate Well Driller's Licence recognised.

Interstate drillers from States that are aligned to the national system can apply for a Tasmanian well drillers licence and will be able to use their interstate licence as proof of knowledge.

Exemptions

It is recognised that there are activities involving the construction of a hole greater then 3m where technically the 'taking' of water may occur, and where it is not feasible or possible to obtain the services of a licensed water well driller. These exceptions to the rule will involve activities such as geo-technical drilling, once off scientific sampling, certain construction activities, mining activities, trenching activities and certain engineering activities. These exemptions will be set out as an order under the Act.

Register of licensed well drillers in Tasmania

NRE Tas will maintain a register of licensed drillers operating in Tasmania including details of their licence. Contact the Department for inclusion on the register

National drillers licensing system – Class & Endorsements

The national system comprises three classes backed by drilling method endorsements. The licence classes match the skill required to work in different types of aquifers, while the six types of endorsements reflect different drilling and construction methods.

A driller's licence comprises of a class, and one or more drilling and construction method endorsement(s).

Classes of drillers licences

The class of licence relates to the type of aquifer system in which a driller may operate:

Class 1 - This licence is restricted to drilling operations in non flowing (sub-artesian) single aquifer systems. Class 1 drillers are not allowed to drill through the upper aquifer formation to tap deeper formations.

Class 2 - This licence, in addition to operation in Class 1 conditions, permits large diameter drilling operations in non-flowing (sub-artesian) single and multiple aquifer systems. Class 2 drillers are allowed to drill through the upper aquifer formation to tap deeper subartesian formations.

Class 3 - This licence, in addition to operating in Class 1 and Class 2 conditions, permits drilling operations in flowing (artesian) aquifer systems.

Drilling method endorsements

Endorsements relate to the drilling and construction methods which a driller may use:

Cable tool - this endorsement authorises drilling activities using cable tool or cable percussion drilling methods.

Auger - this endorsement authorises drilling activities using bucket auger, hollow stem auger or solid stem auger methods.

Rotary air - this endorsement authorises drilling activities using rotary drilling methods with air as the drilling fluid.

Rotary mud - this endorsement authorises drilling activities using rotary drilling methods with water as the drilling fluid or as the base for the drilling fluid.

Non-drilling rig - this endorsement authorises water well activities using non-drilling rig methods including spear point construction, hand digging and the use of excavators or back-hoes for the construction of wells, excavations and galleries.

Sonic - this endorsement authorises drilling activities using sonic drilling methods.

What happens if a driller encounters conditions they are not licensed for?

Drillers who unintentionally drill into an aquifer system for which they are not licensed, (for example, a class 2 driller encounters an artesian aquifer by mistake), must have a suitably licensed driller take over or contact NRE Tas as soon as it is practical to do so.

Providing drillers act reasonably and contact the department in a timely fashion, there should be no cause for action to be taken against the licensed driller.

Qualifications and Experience

Only drillers with the necessary qualifications and experience are eligible to obtain a drillers licence. These requirements are prescribed in the *Water Management Amendment Regulations 2009* and in this handbook.

The options for the minimum combination of qualifications and experience required for each licence class is summarised below:

Class 1 Licence

A Class 1 driller's licence may be issued on application to any person who has:

(a) been employed as a driller for at least 12 months, completed at least six Class 1 wells under the supervision of the holder of a Class 1 licence, and passed the appropriate Drillers' Licence Examinations; or

(b) successfully completed an approved course or national qualifications and has been employed as a driller or driller's assistant for at least 6 months, completed at least six Class 1 wells under the supervision of the holder of a Class 1 licence, and passed the appropriate Drillers' Licence Examinations ; or

(c) been issued with a Class 1 drillers licence to carry out bore construction work in another State or Territory of the Commonwealth

Class 2 Licence

A Class 2 drillers' licence may be issued on application to any person who has:

(a) been employed as a licensed class 1 driller (or has the qualifications and experience necessary to hold a class 1 licence) for at least 12 months and having drilled personally at least 6 Class 1 wells and 3 Class 2 wells under supervision of the holder of a Class 2 licence and passed the appropriate Drillers' Licence Examinations; or

(b) successfully completed an approved course or national qualifications for a class 2 licence, and been employed in the operation of a drilling machine for at least 6 months during which at least 6 Class 2 wells drilled under the supervision of a Class 2 licensed driller and passed the appropriate Drillers' Licence Examinations ; or

(c) been issued with a Class 2 drillers' licence to carry out bore construction work in another State or Territory of the Commonwealth.

Class 3 Licence

A Class 3 drillers' licence may be issued on application to any person who has:

(a) held a class 2 license for at least 12months; been employed as driller for at least 24 months and personally drilled at least 6 class 2 wells and at least 3 class 3 wells under the supervision of a licensed Class 3 driller; and passed the appropriate Drillers' Licence Examinations; or

(b) successfully completed an approved course or national qualifications for a class 3 licence, been employed as a licensed class 2 driller for at least 12 months and personally drilled at least 6 class 2 wells and at least 3 class 3 wells under the supervision of a licensed Class 3 driller; and passed the appropriate Drillers' Licence Examinations; or

(c) been issued with a Class 3 drillers licence to carry out bore construction work in another State or Territory of the Commonwealth and the Board is satisfied that the qualifications and experience of the applicant are equivalent to that required of a driller licensed in the State or Territory;

Applying for a Well Drillers Licence

The *Water Management Act 1999* and the *Water Management (well drillers licensing) regulations 2008* set out the requirements and rules surrounding applying for a drillers licence.

An application can be for a new licence, a licence class upgrade, additional endorsement or amendment. No application is required for licence renewal and minor variations to a licence (such as a change in personal details) can be done without application by contacting the Department.

Obtain the necessary experience and/or qualifications for the type of drillers licence. (The different options available for meeting these requirements for each class of licence are prescribed in the Water Management Regulations and are set out in this document).

New Well Driller's Licence

- Contact the Department to obtain a water well drillers licence kit. The kit contains:
    - a Tasmanian application form for a water well drillers licence
    - a National Driller's Licence application form provided by ADIA and information how to submit the form to ADIA
    - a copy of Tasmanian well driller's Water Act exam
    - a copy of the Minimum Construction Standards for Water Bores in Australia
    - a checklist to complete with the application including explanation of required fees
    - a copy of this handbook
- Complete the ADIA application form and forward to ADIA with the appropriate fee for assessment.
- ADIA sends the examination papers to the applicant
- Applicant completes the examination and returns the papers to ADIA within three months.
- ADIA sends the exam results to the applicant, a copy of the results and the marked exam are forwarded to the Department.
- The Department determines if the licence will be granted and issues the licence if successful.
- The Tasmanian portion of the application, fee and exam must be lodged directly with the Department

A complete application must include:

- **the signed application form stating the class and endorsements sought**
- **completed national exam for the class and endorsement sought**
- **any supporting evidence of qualifications and/or experience as required**
- **copies of the required drill logs completed by the applicant**
- **a digitised image or passport sized photo (signed and dated on the back)**
- **the application fee paid to the Department and ADIA (directly)**
- **completed Tasmanian Water Act exam**
- **certificate of practical competence, completed by an authorised individual.**

An applicant may be required to submit additional information in order for the application to be considered.

Conversion from a current Interstate Driller's Licence

- Contact the Department to obtain a water well drillers licence kit. The kit contains:
    - a Tasmanian application form for a water well drillers licence
    - a copy of Tasmanian Water Act exam
    - a copy of the Minimum Construction Standards for Water Bores in Australia
    - a checklist to complete with the application including explanation of required fees
    - a copy of this handbook
- lodge the application and pay the prescribe fee, all evidence (including a copy of the current Interstate Licence) and the Water Act exam can be lodged directly with the Department
- the Department as the Ministers delegate will determine if the licence is approved and the Department will issue the licence to the applicant

Licence Fees

For current information on fees refer to the most recent version of the Water Management (well drillers licensing) regulations 2008.

Fees are published on the Departments Water Management Forms page of the website; these are updated each Financial Year.
https://nre.tas.gov.au/water/water-management-forms

Assessment of an application

Completed applications and their supporting documents will be assessed according to the requirements of the type of licence sought and in accordance with the *Guidelines for assessing applications for well driller's licences* (Policy #2009/1).

- To approve an application the Minister must be satisfied that:
- the applicant is qualified to physically undertake well works of the relevant class; and
- the applicant is qualified to employ the drilling methods to which the endorsements relate; and
- the applicant satisfies the prescribed requirements outlined in the regulations

Applicants for new licences and licence upgrades to existing licenses will be assessed on:

- Their performance and results from the national exam
- Relevant drill logs from previously drilled bores
- Supporting documentation and information such as qualifications, course certificates, references, compliance history and work history.
- On-site review of the applicant's skills in the form of an on-site assessment or inspection. (This assessment is mandatory for non-water bore drillers but may be discretionary for previously licenced water well drillers where evidence suggests on

Deciding an application

After considering an application the department may;

- Approve the application as submitted; or
- If the applicant agrees, approve the application as if it were for a licence of a class lower than that actually applied for; or
- Refuse the application.

Applicants who are dissatisfied with an outcome have rights of review or appeal.

Issue and licence advice

Approved applicants will receive a well driller's licence along with an explanation of any conditions on the licence. Under the Act, drillers must be able to produce this licence for inspection if required to do so by an authorised officer (s.136E (4)).

Unsuccessful applicants will be advised of the reasons for the decision and advised of their right of review or appeal.

Conditions of a well drillers licence

All Tasmanian water well drillers must comply with certain standards and requirements in order to retain their licence. All licences are subject to standard conditions and some licences may be subject to further conditions depending on the driller's skills and qualifications.

Minimum construction requirements for water bores in Australia

All water wells in Tasmania must be constructed to meet the standards contained the most recent edition of the *Minimum construction requirements for water bores in Australia*. This document is available from departmental offices or on the web at: https://nre.tas.gov.au/water/groundwater/tasmanian-drillers-licence

Drill logs - Information relating to the construction of a water bore

It will be a **condition of a driller's licence** that the drill logs need to be returned to the Department **no later than 30 business days after the completion of a water well** or 90 business days after the commencement of a water well – whichever comes first.

If a client has a water licence pending – a driller's return will need to be received prior to the client receiving a water licence.

The Department will supply drillers with log books and are available from the NRE Tas office in Hobart. An example of how to correctly fill out a logbook is provided in this handbook.

Other drillers licence conditions

Other conditions may be placed on individual licences where an applicant is considered qualified to hold a licence but may not have certain skills and abilities to drill all types of water wells.

Well Works Permits

If a Well Works Permit is required for a water well, the driller must sight the permit before starting work on the well and construct the bore in accordance with the conditions of the permit.

Whose responsibility is a well works permit.

It is the landholder's responsibility to apply and obtain the Well Works Permit and necessary water licence before drilling work commences.

- It is the driller's responsibility to sight the permit before construction.
- It is the driller's responsibility to drill in accordance with the permit including any conditions on the permit.
- It is the driller's responsibility to complete and send to the Department a copy of the drilling results (Bore log).

Details of which bores require a well works permit are available on the NRE Tas web site.

Renewal of Licences

A well driller's licence is valid for 5 years and is renewable at the end of that 5 year term by paying the renewal fee.

The minister must renew a well driller's licence that is otherwise about to expire if satisfied that the licensee-

(a) has paid the prescribed fee; and

(b) has paid all fees and charges payable under the licence; and

(c) has complied with the licence during the expiring term; and

(d) has or satisfies and prescribed competencies (ie: Is still able to drill).

All driller's licence will have a standardised expiry date of the 1st of September

or the 1st of April.

Cancellation and Suspension

A driller's licence can only be cancelled or suspended if:

1. A driller contravenes the conditions of the licence in a material or repeated way; or
2. A driller knowingly drills in contravention of, or without a well works permit; or
3. A driller is convicted of supplying false information associated with the licence; or
4. A driller exceeds the maximum allowed number of **de-merit points** allocated to a licence.

De-merit Points

De-merit points associated with a drillers licence are much the same as de-merit points associated with a drivers licence. De-merit points are allocated to a licence when the holder of that licence commits a drilling offence, and is served an infringement notice. If a driller repeatedly commits a drilling offences they accumulate de-merit points until they exceed the maximum number allowed as prescribed in the *Water Management (well drillers licensing) Regulations 2008*. If this situation occurs the drillers licence is suspended. If after the suspension period drillers continue to repeatedly commit drilling offenses the licence will be

cancelled.

The more serious the drilling offence the greater the number of de-merit points allocated to the licence and the greater the fine.

Currently the number of de-merit points prescribed for a new drillers licence is 12.

Drilling Offences

There are a number of drilling offences under the *Water Management Act 1999*. These are set out under part 7 of the Act, notably in sections 135, 136A, 136D and 136E.

- The major drilling offenses (max 200 penalty units) include:
- Undertaking well works not in accordance with a well works permit – S.135
- Undertaking well works without a well drillers licence – S.136A
- Undertaking well works not in accordance with, the class or endorsement of a well drillers licence – 136A

Other water bore drilling offences (max 50 penalty units) include:

- Contravention of a condition on a well drillers licence – S.136D
- Failing to produce a well drillers licence for inspection – S.136E
- Failing to return a cancelled well drillers licence – S.136I
- Contravention of a stop work order – S.126(4)

Note: Contravention of a condition on well drillers licence will include drilling without returning a drillers return (bore log) to NTR Tas.

Drill logs - Information relating to the construction of a water bore

Driller's returns are the primary source of for Groundwater level, yield and quality data for Tasmania.

In order for NRE Tas to manage the resource it is a condition of a well driller's licence that driller's returns (bore logs) are completed on the approved form and returned to the department within 30 business days after the completion of a water well, or 90 days after the commencement of a water well – whichever comes first.

The approved form for driller's returns is the *information relating to construction of a water bore* form contained in a drillers log book that all operating drillers should have and be familiar with.

Additional copies of the 'Groundwater drilling results log book' can be ordered from NRE Tas by telephoning 6165 3271 or 6165 3266, at least a week in advance.

Completing a drillers return

Driller's forms should be filled in during or immediately after the drilling activity and the original should be sent to the Department of Natural Resources and Environment (NRE Tas) as soon as practicable and within 30 business days.

Borehole co-ordinates should be written as Easting's and Nothings, and the datum should be specified, e.g. AMG66, GDA94.

It is very important that as well as providing the borehole co-ordinates on the first page, a sketch of the property with the borehole location marked is drawn on the second page in the

specified area. If several boreholes are drilled on one property please fill in one form for each of the boreholes.

Information on dry and abandoned boreholes should also be recorded and supplied by drilling companies. This information is required in order to identify areas of lower groundwater potential where drilling for groundwater is not a recommended option.

The YELLOW copy of the borehole record should be given to the water bore owner. The PINK copy should be kept by the drilling company. The WHITE copy should be sent to the Department.

Completed driller's forms should be sent to:

Water Management & Assessment Branch
Department of Natural Resources &
Environment Tasmania
GPO Box 44
Hobart Tasmania 7001

If you have any questions regarding the completion of driller's returns please contact the groundwater section of the Department.

Contacts

Senior Groundwater Management Officer
Primary Industries and Water Division
Department of Natural Resources and Environment Tasmania
GPO Box 44
Hobart TAS 7001
Ph: (03) 6165 3266
Web: www.nre.tas.gov.au
Email: Water.Enquiries@nre.tas.gov.au

Reading List

It is recommended that all drillers hold copies and be familiar with the relevant sections of the *Water Management Act 1999*, *Water Management Regulations 1999* and the *Minimum Construction Requirements for Water Bores in Australia*, edition 4, 2020 (available at https://nre.tas.gov.au/water/groundwater/tasmanian-drillers-licence

A list of other relevant publications follows:

Standard for Water Wells (ANSI/AWWA A100-97)
can be purchased from
DA Information Services
648 Whitehorse Road
Mitcham Vic 3132
Tel: 03 92107777
Fax: 03 92107788
email: service@dadirect.com.au

Australian Standard
Test Pumping of Water Wells (AS 2368-1990)
can be purchased from
Standards Australia
Tel: 1 300 654646
Fax: 1 300 654949
email: sales@sai-global.com

Groundwater and Wells, 3rd Edition:
A Comprehensive Guide for the Design, Installation and Maintenance of a Water Well
can be purchased from Johnson Screens
Tel: 07 38675555
Fax: 07 32652768
http://www.johnsonscreens.com

Appendix 1: Required Skills, Experience and Abilities

CLASS 1 LICENCE:

An applicant for a Class 1 Drillers' Licence must be capable and have knowledge and skills, as they apply to the drilling method endorsement, in:

- The provisions of the legislation and regulations relating to groundwater and groundwater drilling in Tasmania;
- Siting a Bore - recognising potential contamination sources to water supply bores and appropriately site a bore to prevent contamination, and;
- Straightness and plumbness of Hole - setting up a rig, the causes of bent bores and the methods of hole straightening, and;
- Drilling - correctly choosing and using equipment, having regard to such factors as rotational speed and proper annular velocities, and;
- Fishing - their tools and procedures, and;
- Formation Sampling and Description - obtaining representative lithological samples, and labelling and describing them, and;
- Bore design - designing and constructing bores for domestic and stock, groundwater monitoring and irrigation purposes in single aquifer systems, and;
- Construction - seating and sealing of casing, casing types and their uses, methods of grouting casing, headworks design and completion of the bore site;
- Cementing - grouting casing and abandoning bores, and;
- Setting screens and stabilising fill - selecting the appropriate slot size, screen length and diameter, and procedures for screen installation. Selection and installing stabilising fill material, and;
- Bore development and disinfection procedures, and;
- Aquifer testing and water sampling - carrying out a constant rate pumping test, and determining static water level, drawdown and yield; taking and labelling a water sample and;
- Decommissioning - designing and selecting appropriate materials for the abandonment of bores in single non-flowing aquifers systems, and;
- Bore completion reports - correctly filling in a "bore completion" report.

CLASS 2 LICENCE:

An applicant for a Class 2 licence must have the knowledge and skills required of a Class 1 driller together with knowledge and skills as they apply to the drilling method endorsement, in:

- Bore design - designing and constructing bores in multiple aquifers with emphasis on designs and methods used to exclude unsuitable waters, and;
- Screen and gravel pack selection - skill in the design of high yielding bores is required. This entails overcoming entrance velocity problems and carrying out sand sieve analysis in order to select appropriate gravel pack material and screens (ie screen length, diameter and aperture), and;
- Cementing - grouting casing, plug selected zones, effect of cement additives; ability to calculate whole volume and slurry volumes. Hole preparation, casing installation and circulation requirements, and;
- Aquifer testing - the procedures involved in a step drawdown pumping test, and;

- Decommissioning - designing and selecting appropriate materials for the abandonment of bores in multiple aquifers.

CLASS 3 LICENCE:

An applicant for a Class 3 licence must have the knowledge and skills required of a Class 1 and Class 2 driller together with knowledge and skills, as they apply to the drilling method endorsement, in:

- Bore design and common types- designing and constructing bores in aquifer systems that have high pressure conditions; and
- Drilling - correctly choosing and using equipment and fluids, methods, procedures and calculations required for fluid pressure control; and
- Casing - casing types and their applications in high pressure aquifer systems; and
- Bore sealing - methods and procedures and calculations required in carrying out pressure cement jobs; and
- Bore yield testing - determining bore yield and flow and static head pressure for flowing high pressure aquifer systems; and
- Bore completion, headworks and site restoration - headworks design and completion of the bore site in flowing and high pressure aquifer systems; and
- Bore decommissioning - designing and selecting appropriate materials and procedures for the abandonment of bores having high-pressure conditions.

Department of Primary Industries and Water — Water Management Act 1999 — **INFORMATION RELATING TO CONSTRUCTION OF A WATER BORE** *— Required under Section 131 of the Act*

Bore Number (Driller's Number): 001 | **Is this a report on:** ☑ A new bore ☐ Backfilling (decommissioning a bore) ☐ Deepening an existing bore ☐ Rehabilitation (improving borehole performance)

Location of well (nearest town): Clayhill

Property name or Plan/Lot No.: 'Rockdowns' Plan: 54376 Lot: 42

Owner/occupier name: J & K Smith

Owner's telephone contact number: 03 62435678 / 0405623978

Address of owner/occupier in full: 16 BROWNS ROAD CLAYHILL 7307

Address of borehole site (or ☐ if same as above) 1673 GREENS ROAD CLAYHILL 7307

Australian Survey Datum: AMG 66 or GDA 94 | Easting: 349775 | Northing: 5475309 | ☑ GPS ☐ 1:25 000 map ☐ Other (specify)

Well sited by *(Driller, owner, other)*: DRILLER

Method of siting used *(geological or hydrogeological map, MRT database, diviner)*:

Well constructed by *(Company and Person)*: Company name: SUPER DRILL; Driller name: Phillip McRevith Licence No. 001

Date construction commenced: 18/02/09 Date construction completed: 19/02/09

Status of well: ☑ Operating ☑ Capped ☐ Abandoned ☐ Collapsed ☐ Other

Reason for the above status *(pump not yet installed backfilled due to difficult construction, etc.)*: Pump not yet installed

DRILLING SUMMARY

Drilling technique *(type of well construction)*: ☐ Cable tool (P) ☐ Auger ☐ Rotary air (R) ☐ Down-hole hammer (R) ☑ Rotary mud (R) ☐ Other (please specify)

Final depth of bore (m): 39m Original depth of bore (m):

BORE DIAMETER

From (m)	To (m)	Diameter (mm)	Drilling technique *(complete if multiple techniques used)*
0	6	250	Rotary Mud / Blade Bit
6	10	240	Rotary Mud / Rock Bit
10	45	195	RM / Rock bit

SEAL and other annular fill material *(e.g. cement, bentonite, backfill)*

From (m)	To (m)	Material type and grain size (max, min & average)
0	16	CEMENT
16	29	BACKFILL
29	30	BENTONITE SEAL

DRILLER'S LOG

From (m)	To (m)	Rock type
0	3	TOPSOIL
3	6	CLAY FINE SILTY
6	10	SAND & GRAVEL (DRY)
10	18	CLAY SILTY BROWN
18	27	SANDY CLAY WHITE
27	29	SAND AND FINES
29	31	CLAY WHITE
31	34	FINE GRAVEL
34	36	CLAY BROWN
35	39	SAND FINE
39	45	THICK CLAY

CASING – material *(PVC, ABS/thermoplastic, steel, FRP/fibreglass)*

From (m)	To (m)	Inside diameter (mm)	Outside diameter (mm)	Material
0	10	212.6	219	STEEL
0	39		140	PVC Class 12

SCREEN – Inlet types *(slotted, perforated, porous, wire wound, open hole)*

From (m)	To (m)	Inlet type	Number/metre & size (mm)	Number/metre & diameter (mm)
31	33	perforated	20 x 0.5mm	
35	39	Screen S/S	140 OD - 0.4 mm aperture	

GRAVEL PACK

From (m)	To (m)	Material type and grain size (max, min & average)
30	39	3mm gravel

DEPTH TO WATER STRUCK (m)

From (m)	To (m)	Yield (L/s or gph)	SWL (m) before pumping	Drawdown (m)	Duration (h)	Conductivity (µS/cm)
31	34	3	16			445
35	37	2	16	28	3	430

Total yield = 4 ☑ L/s or ☐ gph ☐ dry bore

Average Field Conductivity (µS/cm): 440

DEVELOPMENT METHOD

☐ Bailed ☐ Pumped ☑ Air flow ☐ Other (specify) Duration (h) 3

Standing Water Level (SWL) after development (m) 16m

ARTESIAN BORE ON COMPLETION

Flow (L/s): Pressure (kPa): Temp. (°C):

Please complete details over page

Original form is to be completed and forwarded to Groundwater Management, GPO Box 44, Hobart, Tasmania 7001
Duplicate (yellow) to be retained by water bore owner. Triplicate (pink) to be retained by drilling company.

GW

SAMPLE

Sampled for analysis? ☑ YES ☐ NO	Analysis attached? ☐ YES ☑ NO	
If yes, specify the name of the laboratory to which the sample was submitted.		
Was the sample taken before, during or after the FLOW TEST?	☐ Before ☐ After ☑ During *(specify time)*	Time (hours) 16:12 (19/02/09)

Describe the TASTE, COLOUR and ODOUR of the water.	TASTE: GOOD	COLOUR: CLEAR	ODOUR: ODOURLESS
Results of any other field chemical test: *(e.g. pH, nitrate, dissolved oxygen, etc.)*	pH: 6.3 Temp: 14.2		
Intended use for the water:	☑ Drinking ☑ Stock water ☐ Other? *(please specify)*	☐ Domestic ☑ Garden	☐ Irrigation ☐ Toilet

PUMP TEST ON BOREHOLE COMPLETION

Date of test:	
Standing Water Level before test (m):	
Standing Water Level after test (m):	
Maximum drawdown from standing level (m):	
Period of test (hours):	
Type of pump used:	
Suction depth (metres below surface):	
Method of measuring flow:	
Pump test yield (litres per second):	

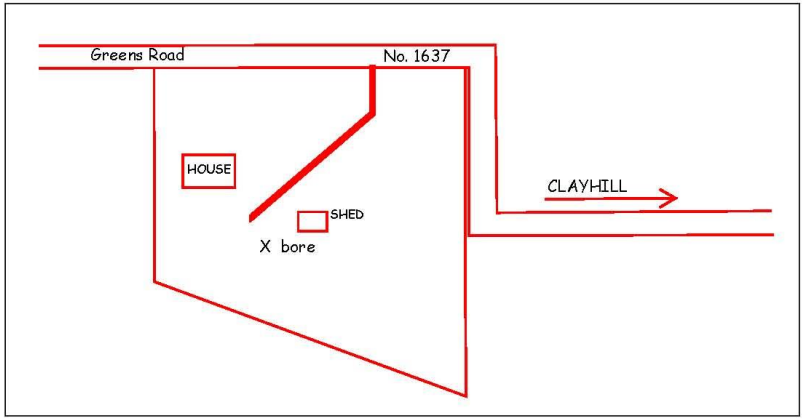
If detailed pump test readings are available please attach them to this form.

GEOPHYSICAL LOG

Please tick if any of the following have been carried out, and attach results if available.

☐ gamma	☐ spontaneous polarisation	☐ density	☐ Other *(please specify)*
☐ resistivity	☑ camera	☐ caliper	

SKETCH OF PROPERTY (showing actual location of bore)



The location of the well is further described by the method ticked below:

☑ A sketch plan showing the location of the well and also showing prominent roads, buildings, structures, and other features such as the distance to the nearest property boundary and any known nearby well.

☐ I attach the relevant section of a 1:25 000 scale map of the land showing the location of the well and any known nearby wells *(This information can also be accessed on the Mineral Resources Tasmania website www.mrt.tas.gov.au).*

REMARKS

Signature of person constructing well: Phil McRevith Date: 19/02/09

This form is to be completed and forwarded to Groundwater Management, GPO Box 44, Hobart, Tasmania 7001