

PIPE SYSTEM MADE OF POLYETHYLENE RT TYPE 2

INNOVATIVE PIPE SYSTEMS



aquatherm flexi pipe



aquatherm

state of the pipe



BRANZ APPRAISALS

This is to Confirm that

aquatherm NZ Ltd

are holders of BRANZ Appraisal

No. 708 (2013)

flexatherm[®] Piping System

PE-RT (polyethylene - raised temperature) type 2 pipe for use in hot and cold potable water supply services.

BRANZ Appraised

Appraisal No.708 [2013]

Issue Date: 5 March 2013



BRANZ

BRANZ Limited

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www.branz.co.nz

P Burghout
Chief Executive

Validity of the Appraisal can be checked by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Company Profile

aquatherm introduced PPR pipe systems to New Zealand in 1999 with our principal product line fusiotherm® pipe system "Green Pipe". Over the years we have expanded our range of products to include Lilac for rain water systems, climatherm pipe systems for HVAC, firestop pipe systems for fire systems and Hydronic underfloor heating systems. Within the product range, there are several product types which are specifically colour coded for plumbing initiatives. aquatherm`s GmbH philosophy of constantly adapting its products to the needs of the market, providing environmentally friendly production, recyclable products and ensuring our manufacturing standards and external testing is to the highest quality standard.

We have an extensive network of trained installers nationally for all industry segments with Active training programmes, site support Q&A facilities, servicing department to support all aspects of the installation process contact our technical Director Milton Sands milton@aquatherm.co.nz.

All aquatherm piping systems for potable water supply here in New Zealand hold WaterMark Certification and/or BRANZ Appraisals to demonstrate compliance with New Zealand Building Code Requirements. aquatherm® GmbH confirms that the lifetime of aquatherm flexatherm pipe system is 50 years and longer according to permissible working pressure / temperature (page 7).

aquatherm® NZ limited confirm all aquatherm flexatherm brass fittings are manufactured from DR brass to AS 3688 to meet lifetime requirements and are covered by the BRANZ Appraisal for flexatherm.



aquatherm® founders

aquatherm® Head Office

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area managers

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Central Auckland - Steve Derig	021 533 340
Lower North Island - Martin Reid	021 421 737
South Island - Paul Eagleton	021 322 623
Technical Consultant - Milton Sands	021 533 555

aquatherm flexi

aquatherm flexi is a flexible piping system manufactured from

a new class of polyethylene of raised temperature type 2 materials for potable water application. With type 2, Dowlex have developed a unique molecular structure which provides improved thermal resistance, flexibility and mechanical hydrostatic strength to existing polyethylene PEX based products.

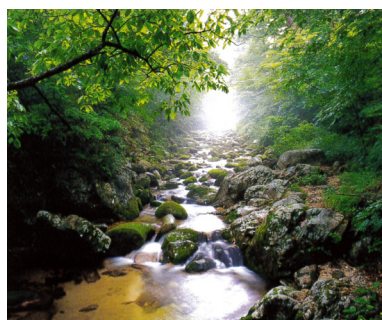
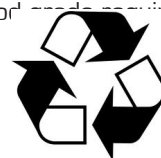
Dowlex have introduced side chain distribution instead of cross linking to polyethylene materials to support improved flexibility, pressure and aging values, smoother bore characteristics, and essentially a material that can be recycled meeting the needs of environmental and social compatibility. Like all thermoplastics flexi has excellent noise suppression a high degree of self insulation and is resistant to corrosion.

flexi is joined to DR brass to AS 3688 standards by sliding sleeve connections, an unsolvable technique, a proven mechanical application here in New Zealand.

Ecology

aquatherm products feature not only a long service life, but also excellent environmental and social compatibility. From the origin of the company, aquatherm placed emphasis on the fact that its products and manufacturing processes should not pollute our sensitive ecosystems, and ensured development of fully recyclable materials which are demanded in today`s environment . Manufacturing is in accordance with ISO 14001: 2004 the recognised environmental standard producing a raw material Polyethylene RT type 2 (PE-RT) for the manufacturing of flexi is importantly

- Long lived and corrosion free
- Has a low additive share of adjustments
- Meets FDA health food grade requirements
- PVC free
- Fully recyclable



Advantages & Benefits

The Next Generation

aquatherm® flexi RT type 2 pipe is a 'next` generation polyethylene RT rated piping solution that utilises a sliding sleeve mechanical joint system manufactured from DR brass to AS3688 standards. aquatherm® flexi pipe system has been

developed to withstand temperatures up to 95°C. It is available in two sizes - 16mm and 20mm.

Benefits of Sliding Sleeve Technology

When flexible pipe connections are required the sliding sleeve technique has excellent benefits. Irrespective of the type of installation (eg. sanitary in wall installation or radiator connection), the sliding sleeve technique can achieve unsolvable connections between aquatherm® flexi pipes and DR brass fittings at low cost in terms of material and / or labour.

Advantages of aquatherm® flexi

aquatherm® flexi pipe system solution offers many benefits. They include:

- Hygienic
- Flexible and easy to install
- High impact strength making it extremely durable
- Low expansion
- High heat stabilised
- Noise suppression
- Environmentally friendly
- Superior flow rates

aquatherm® flexi pipes made of Polyethylene Raised Temperature Resistance type 2 are international recognised for their creep behaviour, this means improved temperature and pressure resistance compared to most plastics.

Certificates and Testing

A test report has been issued by the Sddeutsches Kunststoff-Zentrum (SKZ) Testing Laboratory as part of the means of compliance for SKZ Certificate A403 for the flexi pipe for use as pressure pipes for hot and cold water supply. This test report demonstrates compliance with the requirements of ISO 22391-2 *Plastic piping systems for hot and cold water installations - Polyethylene of raised temperature resistance (PE-RT) - Part 2 for Application Class 1 pipe.*

SKZ A403 HR 3-16,

ams AS/NZS 4020

ISO 10508, ISO 22391 ISO 7686, 2005-10

DVGW work sheet W 534

BRANZ Appraisal 708

Pipe Material

Fields of Application

The aquatherm® flexi pipe system can be used for:

- Potable water for hot and cold
- Recycled water
- Underfloor heating and radiator connections

(available with EVOH O2 tight layer (90026)

aquatherm® flexi RT type 2 Pipe

Colour black


(in coils and straight lengths)

markings

aquatherm® flexi RT type 2 -----

16 x 20 mm ----- ART No: ----- PE-RT type 2 -----

DIN EN22391 application class 1/10 bar -----

SKZ A403: -----  Date ----- Time -----

Machine No: ----- Lot No: ----- MTR -----

MADE IN GERMANY



aquatherm® flexi RT type 2 fittings

Brass Sliding Sleeve

markings

Diameter, DR, a, AS3688 Lic 2551

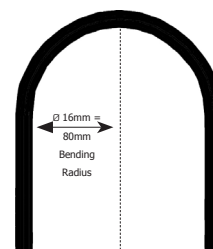
Installation modulus of Elasticity

The sliding-sleeve technique is the only applicable connection for the flexi pipe. flexi pipes can be laid directly from the coils without warming up. The high flexibility of the polyethylene RT type 2 enables an installation of the pipes in very small bending radius.

In case of aquatherm® flexi connection pipes made of Polyethylene RT type 2, the modulus of elasticity - important figure for the flexural rigidity of the pipes - is about 350 N / mm² at 20°C.

Therefore the minimum **Bending radius is 5 x d**.
Taking d as average outside diameter.

Pipes of the dimension 16 x 2.2 mm have a bending radius of $r = 5 \times 16 \text{ mm} = 80 \text{ mm}$



Support Intervals

Pipe Diameter Hot and Cold	
16 mm	20 mm
Support intervals in (mm)	
600 mm	700 mm

Requirements & Limitations

- Must be installed to the requirements of the NZBC (all relevant clauses) and in accordance with manufacturers technical requirements.
- Must be installed by an aquatherm registered installer.
- Pipe (only) can be laid directly in concrete/plaster and solid walls in accordance with aquatherm® flexatherm installation procedures.
- All in ground services & inslab installations must be installed to AS/NZS 3500.5.2000 Clause 2.13.2.
- Pipe must be clipped as to aquatherm support intervals for flexi using brand matched clips or clippets. Ensure all pipe work is installed to NZBC requirements.
- Can be used for radiator connections, however we recommend the use of our EVOH barrier PE-RT 1 product BRANZ appraisal Number 773 manufactured in accordance with DIN 4721 for underfloor and radiator connections.
- Pipes & fittings shall not be used within 1 meter of the inlet or outlet of a water heater. Pipe & fittings shall not be used when exposed to direct sunlight.
- Is not suitable for chemicals or petroleum oils.
- Pipe must not be used on the flow & returns from solar panels, wetbacks or relief drains of an uncontrolled heat source.
- When connecting to other piping systems always use thread connector. Do not use aquatherm Sliding Sleeve connector.
- When used as an alternative non potable supply, ensure pipes are clearly & permanently labeled in accordance with AS1345 & AS1319.

Transport & Storage

Handle and store flexi pipe and fittings to avoid damage when stored on site ensure they are,

- Under cover
- Out of direct sunlight
- On a flat surface
- Away from active site construction
- Stored away from paints, chemicals, grease and other active substances.

Ensure that unprotected pipes are not dragged across the ground or concrete floor. Where ever possible keep pipes in original packaging.

Testing

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Ensure that all fixtures / appliances / tanks / water heater / tapware and valves are isolated before commencing testing. Test to aquatherm® flexi test procedures as applicable. aquatherm NZ Ltd must receive this information within 3 months of the installation for the warranty to be valid. Please consult with your local area Council as they may require a copy of the test results for their records.

Note:

When testing aquatherm® flexi pipes that are joined to green pipe (fusiotherm®), the standard high pressure fusiotherm® test can be used.



Pipe Fittings

Characteristics

Manufactured from DR brass to AS3688

All fittings of the aquatherm® flexatherm system are in accordance with the latest European Potable Water Standards and tested to AS/NZS 4020. Made from a dezincification resistant brass. This type of brass has been developed especially for the application in areas with aggressive water.



aquatherm® flexatherm DR brass elbow



aquatherm® flexatherm DR brass connector



aquatherm® flexatherm Tool Case



Tool & Case 1x hydraulic flexatherm mounting tool.

Tools

aquatherm® flexi Tools

The aquatherm® flexi sliding sleeve system has a very simple connection technique. You will only need:

- an expanding tool
- a mounting tool

To get a permanent connection.

Both tools are equipped with interchangeable false jaws for the dimensions Ø16 mm to 20 mm. The tools including a plastic pipe cutter, are supplied in a handy steel case.

Tool Change

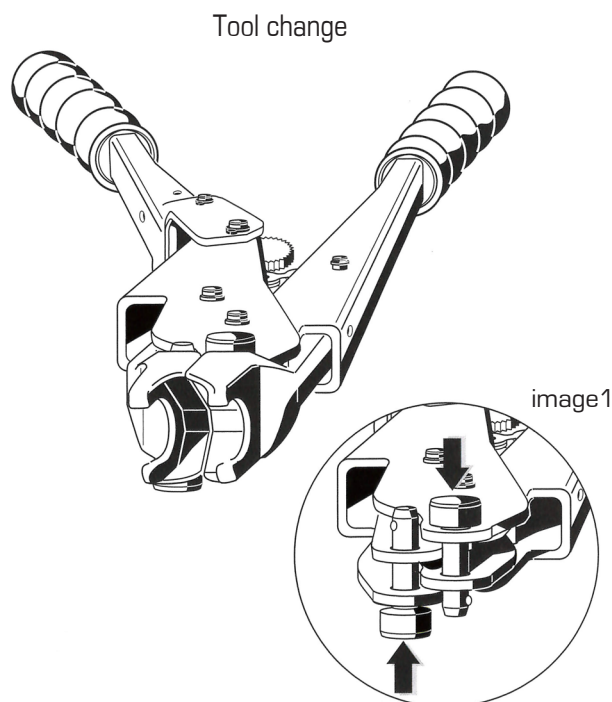
The interchangeable head of the expanding tool is screwed off then the required dimension is fixed.

Only remove the bolts to change both inserts of the aquatherm® flexi mounting tool. After inserting the false jaw the bolts need to be inserted in opposing directions (image 1)

The expanding head, expanding tool and mounting tool require light lubrication to avoid wear and tear.

Important notice

aquatherm® NZ Limited does not allow the installation of other branded pipe fittings with the aquatherm® flexi range.



Connection technique

aquatherm® flexi uses an interlocking connection giving it a durable, tight result.

The connection technique involves pressing the aquatherm® flexi sliding sleeve onto the aquatherm® flexi pipe using the fitting. It is important to use only the aquatherm® flexi system pipes, tool, fittings and connection pieces made by aquatherm when connecting with sliding sleeve.

1. Compressing the corrugated pipe

If using corrugated pipe the PE- corrugated pipe is compressed and can be adjusted with the red or blue end sleeve. It is not necessary to cut the corrugated pipe before connecting it.



2. Put the sliding sleeve onto the pipe

Before expanding the connection pipe, the flexi sleeve has to be slid onto the pipe. This sleeve is identical at both ends. It does not make any difference which end is slid onto the pipe first.



NOTE

The sliding sleeve must be kept away from the area where the pipe is being expanded as otherwise the tool and pipe might be damaged.

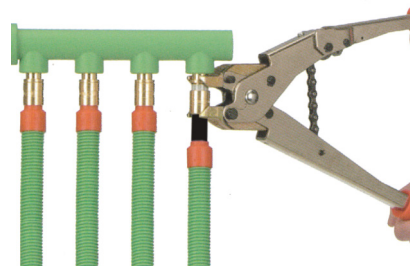
3. Expanding of the connection pipe

To expand the pipe, the tool handles have to be opened completely, so that you can insert the expanding head into the pipe end, the expanding tool handles are pressed together the aquatherm® flexi connection pipe is bulge formed, the tool should be opened again, turned slightly and closed again so that the pipe is expanded evenly.



4. Pressing

The expanded pipe end is pushed on to the fitting all the way up to the stop. Now the assembly tool is put on. On compressing the tool the sleeve presses the plastic pipe onto the supporting body. Now the quick and safe permanent connection is installed.



Characteristics of sliding sleeve connection



Installation

flexi RT Type 2

Calculation to ISO 22391-2:2009E

for hoop stress 3.5 N/mm2



Complete Systems
commercial and
residential.



Flexible and ideal
for single
connections
commercial



Seamless joining
to the green pipe
system

Premissible Working Pressures

ISO 10508	Class 1 (60°C)	10 Bar
Temperature °C	Time (Years)	Pressure (bar) safety factor s=1.25
20°C	1	20.3
	5	19.9
	10	19.8
	25	19.6
	50	19.4
	100	19.2
30°C	1	18.5
	5	18.1
	10	17.9
	25	17.7
	50	17.6
	100	17.4
40°C	1	16.7
	5	16.3
	10	16.1
	25	15.9
	50	15.8
	100	15.7
50°C	1	14.9
	5	14.5
	10	14.4
	25	14.2
	50	14.0
	100	13.9
60°C	1	13.1
	5	12.7
	10	12.6
	25	12.4
	50	12.2
	100	12.0
70°C	1	11.3
	5	11.0
	10	10.8
	25	10.6
	50	10.5
	100	10.3
80°C	1	9.5
	5	9.3
	10	9.2
	25	9.1
	50	9.0
	100	8.9

Warranty & Lifetime Statement

aquatherm flexi



aquatherm® GmbH confirms that the lifetime of aquatherm flexi pipe is 50 years and longer according to the permissible working pressure/temperature. (Page 7).

aquatherm® NZ limited confirm all aquatherm flexi brass fittings are manufactured from DR brass to AS3688 to meet lifetime requirements.

aquatherm® GmbH gives a 10 year guarantee on all plastic pipes and fittings produced by them.

Within the scope of this guarantee aquatherm® GmbH will supply replacement pipe if damages are traceable to materials faults and defects.

Furthermore within the scope of this guarantee aquatherm® GmbH compensates for material damage to third persons, for investigation, removal, acceptance, dismantling or laying bare of all defective goods.

aquatherm® NZ Limited confirms a 10 year warranty on all aquatherm flexi brass fittings.

aquatherm® guarantee is conditional on:

- The joining of pipe and fittings using only aquatherm® tools and devices.
- Installation of pipe and fittings are certified aquatherm® technical rules and guidelines for correct installation principles using brand matched pipes and fittings.

Limits of 3rd party liability GmbH

- For bodily injury: 15.000.000 Euro (per occurrence)
- For property damage: 15.000.000 Euro (per occurrence)

Installation Address:

Description of Installation:

Name of Plumber:

Signature:

Date of Completion:

Reg. Installer Number:

This warranty must be fully completed, signed and returned with the completed test sheet within three months of the completion of the project installation to the New Zealand Agent:

aquatherm® NZ limited, P.O. Box 99 393, Newmarket, Auckland, New Zealand. Phone 09 5707204, Fax 09 570 7206

aquatherm flexi test sheet



Description of the Installation

Address:

.....

.....

Type of installation:

.....

Pipe lengths:

Ø 16 mm m

Ø 20 mm m

Time test started:

Time test finished:

Test period:

Client:

.....

.....

.....

Contractor:

.....

.....

.....

Date:

Preliminary Test

(Testing procedure NZ Jan 2001)

Test pressure - 15 bar:

1. Test pressure 15 bar 30 minutes.
2. Result pressure test.

Note:

When testing aquatherm® flexi pipes that are joined to green pipe (fusiotherm®), the standard high pressure fusiotherm® test can be used.

Result preliminary test:

The test is to be conducted as a continuous test at 15 bar with the three steps noted above.

If leakage occurs, please replace the part and re-start the testing procedure.

The test is completed and acceptable when the above has been undertaken and no leaks are present.

Finally, complete all parts for the test sheet and return a copy to:

aquatherm® NZ Limited

Fax: 09 570 7206

Post: P.O. Box 99 393, Newmarket, Auckland.

Email: sales@aquatherm.co.nz

Signature/Stamp:

Reg. Installers Number:

Pipes flexi RT Type 2



aquatherm flexi flexi RT Type 2 Pipe

Art No:	Dimension	Packing unit	Price Unit
77420	16 x 2.2mm	100m coil	1
77422	20 x 2.5mm	100m coil	1

flexatherm RT Type 2
Material: PE-RT Type 2
Colour: black
Form supplied: Coil



aquatherm flexi flexi RT - Lengths

Art No:	Dimension	Packing unit	Price Unit
77440	16 mm	4m length	1
77442	20 mm	4m length	1



aquatherm flexi Corrugated Conduit

Art No:	Dimension	Packing unit	Price Unit
77010	16 mm	100m coil	1
77012	20 mm	50m coil	1

Corrugated Conduit
Material: PE
Colour: green
Form supplied: Coil



Fittings flexi RT Type 2



aquatherm flexi Wingback Elbow

Art No:	Dimension	Packing unit	Price Unit
79000	16mm x 1/2"	1	1
79002	20mm x 1/3"	1	1

Wingback elbow
Material: Brass
16 mm G 1/2
20 mm G 3/4



aquatherm flexi Hose Plate

Art No:	Dimension	Packing unit	Price Unit
79045	16 mm x 1/2"	1	1

Hose Plate
Material: Brass



aquatherm flexi Equal Tee

Art No:	Dimension	Packing unit	Price Unit
79100	16 x 16 x 16mm	1	1
79102	20 x 20 x 20mm	1	1

Equal Tee
Material: Brass



aquatherm flexi Reducing Tee

Art No:	Dimension	Packing unit	Price Unit
79110	16 x 20 x 16mm	1	1
79112	20 x 16 x 16mm	1	1
79114	20 x 16 x 20mm	1	1

Reducing Tee
Material: Brass



Fittings flexi RT Type 2



aquatherm flexi

Art No:	Dimension	Packing unit	Price Unit
79182	16mm x 1/2"	1	1
79186	20mm x 3/4"	1	1

Female Connector
Material: Brass



aquatherm flexi

Male Connector

Art No:	Dimension	Packing unit	Price Unit
79200	16mm x 1/2"	1	1
79203	20mm x 3/4"	1	1

Male Connector
Material: Brass



aquatherm flexi

Joiner

Art No:	Dimension	Packing unit	Price Unit
79210	16 x 16mm	1	1
79212	20 x 20mm	1	1
79250	20 x 16mm Reducing	1	1

Joiner
Material: Brass



aquatherm flexi

Degree Elbow

Art No:	Dimension	Packing unit	Price Unit
79300	16mm 90°	1	1
79302	20mm 90°	1	1

Degree Elbow
Material: Brass



aquatherm flexi

Adaptor

Art No:	Dimension	Packing unit	Price Unit
78320	16/16	2	1
78300	20/16	2	1
78302	20/20	2	1

Adaptor
Material: PP-R/Brass



aquatherm flexi

Weld-in-Saddle Adaptor

Art No:	Dimension	Packing unit	Price Unit
78402	40/16	2	1
78404	40/20	2	1
78406	50/16	2	1
78408	50/20	2	1
78410	63/16	2	1
78412	63/20	2	1

Weld-in-Saddle Adaptor
Material: PP-R/Brass



Fittings flexi RT Type 2



aquatherm flexi

Swivel Fitting

Art No:	Dimension	Packing unit	Price Unit
79340	16 x 1/2 mm	1	1
79342	20 x 3/4 mm	1	1
79350	16 x 1/2 mm swivel elbow	1	1

Swivel Fitting
Material: Brass



aquatherm flexi

Blind Plug

Art No:	Dimension	Packing unit	Price Unit
79980	16 mm	1	1
79982	20 mm	1	1

Blind Plug
Material: Brass



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Sliding Sleeve

Art No:	Dimension	Packing unit	Price Unit
79990	16 mm	1	1
79992	20 mm	1	1

Sliding Sleeve
Material: Brass



aquatherm flexi

Pipe Bend Bracket

Art No:	Dimension	Packing unit	Price Unit
79996	16 mm	1	1
79998	20 mm	1	1

Pipe Bend Bracket
Material: Galvanised



aquatherm flexi

Pipe Clamp with Nail

Art No:	Dimension	Packing unit	Price Unit
60716	16 mm	100	1
60720	20 mm	80	1

Pipe Clamp with Nail
Material: Plastic



aquatherm flexi

Art No:	Dimension	Packing unit	Price Unit
77080	16 mm red	50	1
77082	20 mm red	50	1
77090	16 mm blue	50	1
77092	20 mm blue	50	1

Hot & Cold Pipe Indicators
Material: PE
Colour: Red / Blue



Tools flexi RT Type 2



aquatherm flexi

Mounting Tool

Art No:	Dimension	Packing unit	Price Unit
50802	for Ø16, 20,mm	1	1
with tools for Ø 16mm and 20mm for the mechanical sliding sleeve connection			

Mounting Tool
with tools for Ø 16 & 20 mm, for the
mechanical sliding sleeve connection



aquatherm flexi

Insert Tool for Mounting Tool

Art No:	Dimension	Packing unit	Price Unit
50826	for Ø16 mm	1 set	1
50828	for Ø 20 mm	1 set	1
50829	for Ø 16/20 mm	1 set	1

Insert Tool
for mounting tool 50802



aquatherm flexi

Pipe Cutters

Art No:	Dimension	Packing unit	Price Unit
50103	up to Ø 25 mm	1	1

Pipe Cutters
for aquatherm surface
heating pipes



aquatherm flexi

Expanding Tool

Art No:	Dimension	Packing unit	Price Unit
50800	for Ø 16 - 20 mm	1	1

Expanding Tool



aquatherm flexi

Caps for Expanding Tool

Art No:	Dimension	Packing unit	Price Unit
50817	for Ø 16 - 20 mm	1	1

Caps
for expanding tool



aquatherm flexi

Tools & Case

Art No:	Dimension	Packing unit	Price Unit
50804	for Ø 16 - 20 mm	set	1

Tool & Case
including pipe cutter
expanding tool with false jaws
mounting tool with tools for
16 and 20 mm.



aquatherm flexi

Tools & Case

Art No:	Dimension	Packing unit	Price Unit
50809	for Ø 16 - 20 mm	set	1

Tool & Case
1x hydraulic flexatherm
mounting tool.



Where to buy



aquatherm
state of the pipe

aquatherm NZ

36 Rockridge Avenue, Penrose

Auckland 1061.

P.O. Box 99393 Newmarket,

Auckland 1149

P: 09 5707204

F: 09 5707206

www.aquatherm.co.nz

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Branches Nationwide**



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www.chesters.co.nz



www.micobathrooms.co.nz