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Underfloor heating | Tiled shower solutions

It's not what you see, it's how it makes you feel!

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contents

Undertile

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undertile heating

Enhance the natural beauty and practicality of tiles with the comfort, safety, and efficiency of a tried, tested, and proven heating system.

product description

WARMUP Undertile Heating is a system of low-temperature electric radiant elements laid directly under the floor covering. It delivers extremely luxurious, efficient and effective heating.

The WARMUP Undertile Heating element comprises of double insulated multi-stranded resistance wires, incorporating a tinned copper braided earth. The element has an overall diameter of 2.40mm.

The heating element is laid (evenly spaced) directly on top of the floor to be tiled and then covered with a specially formulated protective screed (optional). It offers a perfect substrate for laying tiles and when used in conjunction with a flexible tile adhesive, will remain stable under tiles over virtually any substrate (including wooden floors) for years to come.

Our installation will add approximately 3-4mm to your floor height when protective screed is used.

Connection to power is made via cold tails bought up from floor surface, hidden within the wall cavity, to the point of control.
Proximity to the tiled surface results in significantly increased response time in comparison with other in-floor heating systems. As such, maximum efficiency can be achieved by control using a floor sensing thermostat.

Undertile heating can be used as either background heating to remove the chill of tiles, or in conjunction with carpet heating (or other forms of heating) as a primary heat source for homes.

technical specifications

Conductors:	Multi-strand resistive core.
Primary Insulation:	"Teflon®" (ETFE) polymer resin.
Earth Screen:	Braided tinned copper wire with an aggregate cross-sectional area of 0.4mm^2, minimum 90% coverage.
Outer Insulation:	PVC.
Joints:	Resistive core and cold tail joined with crimped tinned-copper butt connector, insulated with high-temperature adhesive lined heatshrink sleeving.
Cold tails:	Purpose-made, PVC insulated, 2 - core flexible cord - 3m in length.
Packaging:	All cables supplied on disposable cardboard reels, with both ends of the cold tails exposed for testing prior to installation.
Protective coatings:	Cement based 2 part latex enhanced protective screed (optional).
Temperature limits:	**Normal operating temperature using a floor sensing thermostat 24-28°C. NB: Dependent on personal preference and climatic conditions.**

running costs

Because the WARMUP cable is free running, it can be laid exactly where required. This flexibility enables us to not only heat the most oddly shaped room, but also to reduce energy wastage by heating only where heating is required. Typical response time from startup is between 30 to 60 minutes (depending upon the substrate, tile, insulation or no insulation and geographic location). WARMUP Undertile Heating is controlled by using a floor sensing thermostat for accuracy.

Heating cable spacing on the floor ranges from 50mm to 100mm dependent upon the heating requirements and floor covering. Typical cable spacing is between 80mm and 95mm.

The power drawing will vary between 80 and 200 watts per square meter with the average installation at 150 watts per square meter.

Actual maximum running costs per hour can be calculated at the time of quotation and will vary due to differing power charges nationwide. Reductions in running costs per hour will be achieved with the use of thermostats. Typically, however, a temperature setting on a radiant heated floor can be set to run at 2-3°C lower than conventional air circulating systems without causing any reduction in comfort levels. A 1°C reduction in thermostat setting can result in up to a 5% saving.
For more information please refer to our website: **http://www.warmup.co.nz/**

installation

Where applicable, WARMUP Undertile Heating follows the recommendations of the BRANZ "Good Tiling Practice" book for the preparation and tiling of floors.

WARMUP Undertile Heating is specifically designed for use under ceramic tiles, marble, or granite. Slate tiles and wooden floors such as Parquet can be heated however due to their conductive properties and thickness of grouting/adhesive, the response time and heat loading will vary. Care must be taken in the preparation and installation of wooden floor coverings, and the recommendations of the wooden floor specialist strictly adhered to.

Preparation required
1. Supply of circuit wiring from distribution board to recommended control point for each heated floor zone.
2. Supply of a draw wire from control point down to floor level directly below, to enable our cold tails to be pulled through in the wall cavity.
3. Floor preparation including waterproofing, if required, should be completed prior to heating installation.

Once correctly prepared…

4. WARMUP Undertile Heating installed by an approved specialist.

Then…

5. The tiler completes tiling once heating protective coatings have fully cured (typically 24 however possibly up to 48hrs dependent upon the substrate and drying conditions)
6. WARMUP cold tails and controller are connected to power source and commissioned by a registered electrician.

NOTE: In accordance with NZ Safety Standards all installations must be connected via an RCD (Residual Current Device).

7. Set controls and enjoy.

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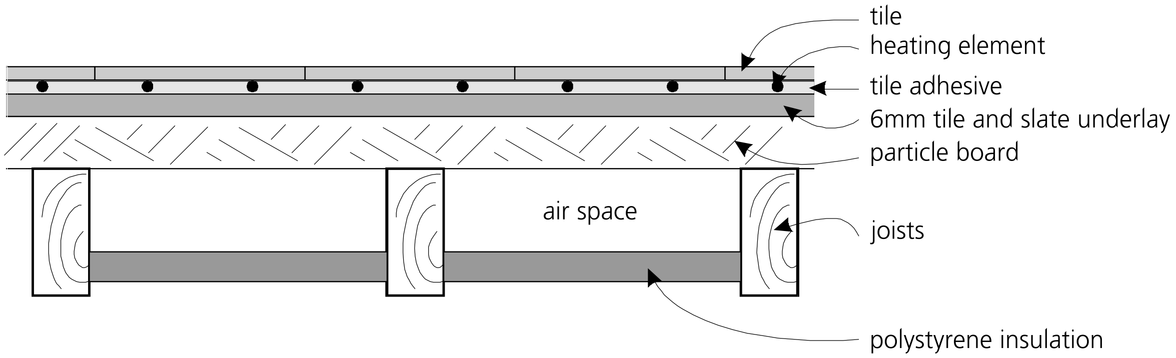
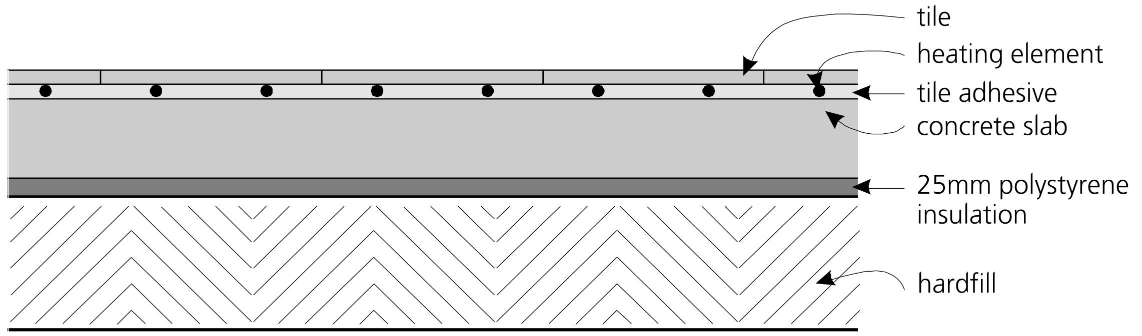
Undertile Cross Section
Timber & Concrete Floor

Timber floor



Concrete floor



Undertile Heating

The Undertile element used for the trade kits offers the following:

- A free form element
- Available in 13 different sizes
- 2.4mm diameter
- Coverage from 0.5 m^2 for small areas – 24.0 m^2 for larger areas
- Cold tails are pre assembled & heat shrunk to the element
- Double Insulation
- Meets New Zealand Standards
- Element has a Safety Net Warranty on installation.

Warmup heating kits are designed for quick, uncomplicated installation. Every kit is supplied with simple, clear installation instructions. Nationwide backup is available should you require support during your project. Call 0800 WARMUP.

The undertile heating kit provides the following components for the trade professional to complete an undertile heating job.

- Element, a choice of 13 sizes covering an area of 1m2 to 24m2
- Continuity tester
- Element adhesive
- Tape
- Instruction manual

Various thermostat and control options are available, with the option to upgrade later if needed.

In today's economic climate, more people are following the simple DIY steps to luxurious warmth. Warmup's affordable underfloor heating products will ensure you are 100% comfortable right throughout winter – just switch on and enjoy!

Kit includes:
- Warmup Undertile Heating Element
- Continuity tester
- Element Adhesive
- Tape &
- Instruction Manual

Control options (at an additional cost)
- Non-programmable thermostat
- Fully programmable Air/Floor Sensing thermostat

KIT	WATTAGE	ELEMENT LENGTH	COVERAGE AREA
UT200	200	16.5m	$0.5m^2$ - $1.0m^2$
UT300	300	25.0m	$1.0m^2$ - $2.2m^2$
UT400	400	33.5m	$2.3m^2$ - $3.0m^2$
UT500	500	41.5m	$3.0m^2$ - $4.0m^2$
UT650	650	54.0m	$4.0m^2$ – $5.0m^2$
UT800	800	66.5m	$5.0m^2$ – $6.0m^2$
UT1000	1000	83.5m	$6.0m^2$ - $7.5m^2$
UT1250	1250	105.0m	$7.5m^2$ – $9.0m^2$
UT1500	1500	125.0m	$9.0m^2$ – $12.0m^2$
UT1800	1800	150.0m	$11.0m^2$ –$13.5m^2$
UT2000	2000	166.5m	$13.5m^2$ –$16.0m^2$
UT2500	2500	208.5m	$16.0m^2$ –$20.0m^2$
UT3000	3000	250.0m	$20.0m^2$ –$24.0m^2$

Undertile
DIY Sizing Guide

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Sizing guide

For larger or different area sizing - please contact 0800 WARMUP (927-687) for your local Distributor.

Element	Total Ohms (@ 20°C)	Cable Length	Coverage in sqm (at wire centers of ± 10% (mm)			Power Density (watts per sqm) ± 5%		
			60	85	100	60	85	100
UT200	264 ohms	16.5m	0.90	1.22	1.42	222	163	140
UT300	176 ohms	25.0m	1.29	1.79	2.09	232	167	144
UT400	132 ohms	33.5m	1.76	2.45	2.86	227	163	140
UT500	105 ohms	41.5m	2.18	3.06	3.57	229	164	140
UT650	82 ohms	54.0m	2.91	4.07	4.76	223	159	136
UT800	66 ohms	66.5m	3.60	5.06	5.91	223	159	136
UT1000	52 ohms	83.5m	4.56	6.41	7.50	219	156	133
UT1250	42 ohms	105.0m	5.82	8.18	9.58	216	154	132
UT1500	33 ohms	125.0m	6.96	9.79	11.47	215	153	131
UT1800	29 ohms	150.0m	8.38	11.59	13.46	215	155	134
UT2000	25 ohms	166.5m	9.37	13.19	15.46	211	150	128
UT2500	21 ohms	208.5m	11.85	16.69	19.56	214	152	129
UT3000	16 ohms	250.0m	14.31	20.14	23.61	210	149	127

Notes:

These are nominal specifications only.

Coverage table is by calculation only – actual wire layout on the floor may have an effect on the actual coverage obtained. The table shows the area in sqm that any cable will cover at various wire centres, e.g. if a UT1000 is laid up with the runs 85mm apart, a total heated area of 6.41sqm should be achieved.

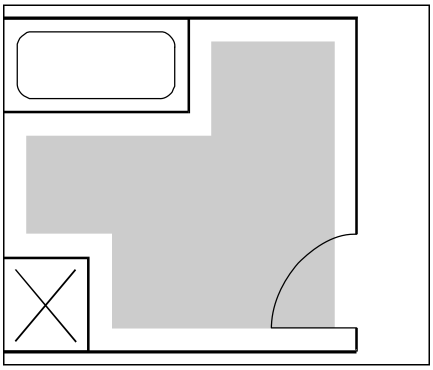
The power density table shows the watts per sqm of the heated area – the higher the power density the greater the temperature rise on the tiled surface.

The table below gives the maximum and minimum wire spacing between the runs of the heating element.

Type of flooring	No less than(mm)	No greater than(mm)
Timber	50mm	100mm
Concrete	50mm	75mm
If using Marmox insulation board with timber or concrete	50mm	100mm

Calculate the actual spacing of the heating element

1. Work out the actual sqm to be heated (see grey shaded area) i.e. **3.53sqm**.



2. Divide this figure by the length of the wire to be used per the sizing guide – $3.53m^2$ ÷ 41.5m = **0.085**.

3. Multiply this figure by 1000. 0.085 x 1000 = **85mm apart is your wire spacing**.

Summary:

$\frac{3.53m^2}{41.5m \text{ of wire}}$

= 0.085 x 1000 = 85mm apart

Helpful Hints

- The element is a continuous wire that must not be shortened or lengthened. Even spacing of the wire will ensure an even temperature of your tiles.
- The adhesive spray ensures that the adhesive tape holds in place. Allow 10 minutes for curing before attempting to adhere tape.
- All the elements are marked with a halfway marker for an indication of how your installation is progressing.
- For a successful long installation life, your floor should be clean, dry and stable (wooden floors) or fully cured (concrete floors).
- The table below gives the maximum and minimum wire spacing between the runs of the heating element.

Type of flooring	No less than(mm)	No greater than(mm)
Timber	50mm	100mm
Concrete	50mm	75mm
If using Marmox insulation board with timber or concrete	50mm	100mm

WARNING - Electrical Requirements

Please pass onto your Electrician

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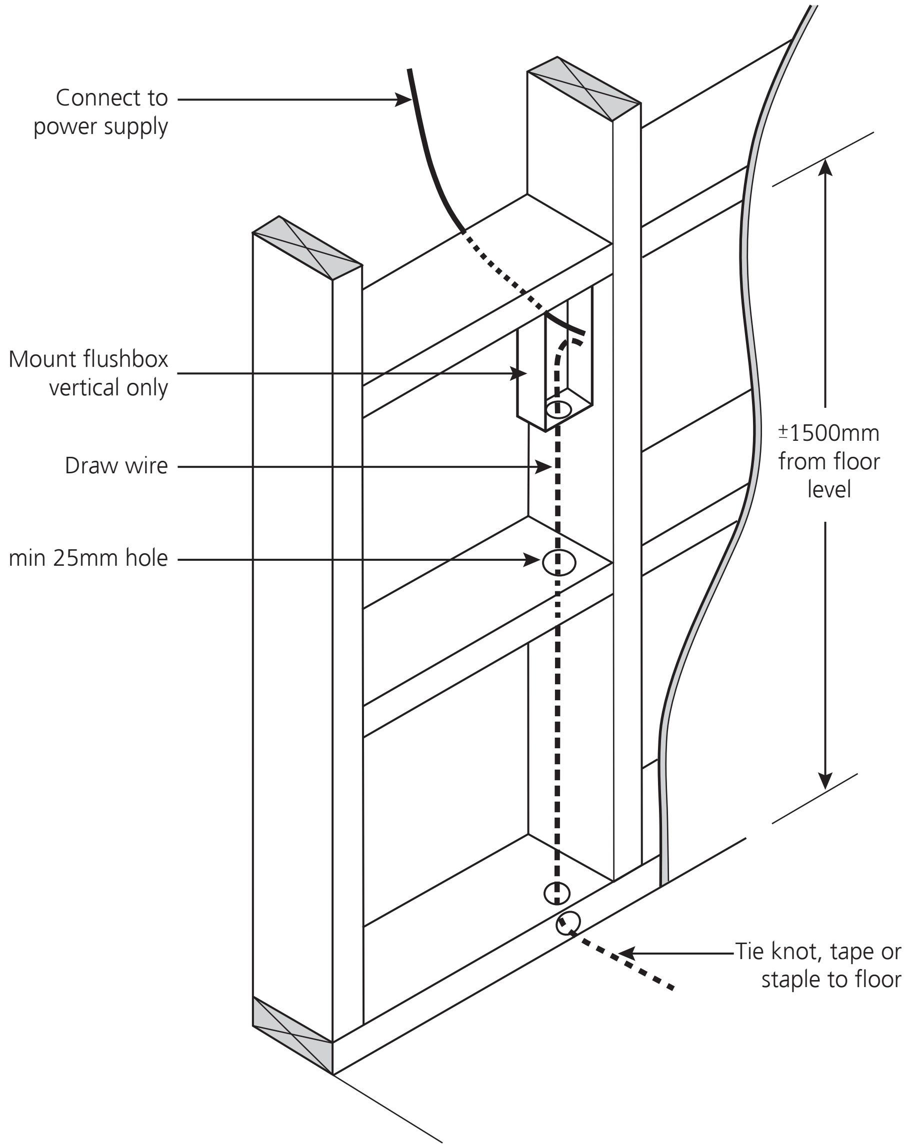
Cross section for pre-wire requirements of undertile and undercarpet heating systems



Notes:

1. All our controllers are designed to fit Vertical wall bracket.
2. Height off the floor for flush boxes or wall bracket can vary with controllers.
3. The use of a draw wire or conduit is preferred. Ensure that it has a clear passage from floor to vertical wall bracket.
4. If any queries please do not hesitate to contact us on 0800 927 687.

Safety Net Guarantee

- When the Warmup undertile element is damaged at the time of installation, the element can be taken back to Warmup NZ Ltd & will be replaced free of charge

- The element must be returned within 30 days from date of purchase.

- Proof of purchase must be provided.

- The floor covering should not be installed over the element.

- Warmup offers the option of repairing the element if the installation has taken place. This is generally done in one visit which would be a warranty repair.

Fault Finding

- As part of the service to the trade professional, Warmup offers a fault finding service after the floor surface has been laid. This encompasses the use of a thermal imaging camera.

- Generally a single repair can be achieved within 2 hours, from finding the fault to lifting the tile, repairing the fault & replacing the tile.

Accredited Installer
LIFETIME warranty warmup®

Lifetime Warranty

Warmup is committed to ensuring the highest level of customer satisfaction. We have 100% confidence in the quality of our products and installations and back this up with a lifetime warranty on our undertile heating products. Verification of all purchases must be registered with Warmup within 30 days of purchase.

BRANZ Appraised
Appraisal No. 774 [2019]
Appraisal No. 644 [2017]
Appraisal No. 895 [2018]

BRANZ Appraisal

Warmup undertile heating has recently been awarded the much coveted BRANZ appraisal for our undertile heating, after BRANZ undertook a thorough technical assessment of all the products and systems. Warmup undertile heating is the only product in its class to receive the Appraisal from BRANZ for use in both internal dry and wet areas of buildings. This appraisal complements the existing accreditations and awards already received by Warmup.

7552 RADIANT FLOOR HEATING

1. GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- electrical automation
- complete with componentry
- electrically-powered fittings

1.1 RELATED WORK

Refer to section 6211 TILING and 6511 CARPET.

Documents

1.2 DOCUMENTS

Documents referred to in this section are:

NZBC E2/AS1	External moisture
NZBC G9/AS1	Electrical installations within Domestic Dwellings
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand WiringRules)
AS/NZS 3008	Electrical installations - Selection of cables - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification-general requirements for electrical equipment
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth-leakage devices)
AS/NZS 3350	Safety of household and similar electrical appliances - General requirements
NZS 6401	Electric cables PVC insulated for working voltages up to and including 600/1000v
NZECP	Codes of practice

AS/NZS ISO/IEC 15018: Information technology-generic cabling for homes
Electricity Regulations 1997

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
Warmup Technical Manual

Copies of the above literature are available from:

Web:	www.warmup.co.nz
Email:	kelly@warmup.co.nz
Telephone:	03 377 1883
Fax:	03 377 1885

1.4 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

MCB	multiple circuit breaker
RCCB	residual current-operated circuit breakers
RCBO	residual current-operated circuit breaker with over current protection
RCD	residual current device
PCB	printed circuit board
PTC	permit to connect
TPS	tough plastic sheathed
GLS	general lighting service
CFL	compact fluorescent lamp
ELV	extra low voltage
SIA	security integration architecture

LED	light emitting diode
LCD	liquid crystal display
VDI	voice, data, image
PIR	passive infrared

Requirements

1.5 COMPLY
Comply with the Electricity Regulations 1997, AS/NZS 3000, AS/NZS 3008.1.2 and the New Zealand electrical codes of practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.6 QUALIFICATIONS
Carry out work under the direct supervision of a holder of a practising licence under the Electricity Regulations 1997.

1.8 CERTIFICATE OF COMPLIANCE
Supply a certificate of compliance to the owner, as required by the Electricity Regulations 1997, and in particular, clauses 16, 34 and 35. The network utility operator is to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.

Warranties

1.9 WARRANTY
Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.
Warranty period: 1 year

Refer to the general section for the required form of WARRANTY AGREEMENT and details of when completed warranty must be submitted.

2. PRODUCTS

2.2 CABLES
Tough plastic sheathed copper conductors to NZS 6401, stranded above 1.0 mm^2, and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.0 mm^2 on 10 amp MCBs
Lighting circuits:	Commercial: 1.5 mm^2 on 16 amp MCBs
Power circuits:	1.5 mm^2 on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction 2.5 mm^2 on 16 amp MCBs for domestic insulated construction, or filled cavity 2.5 mm^2 on 20 amp MCBs for unenclosed or unfilled cavity construction 2.5 mm^2 on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits:	Single phase: 6 mm^2 on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions may be above 35°C.

2.5 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCCBs' meet Type A and comply with AS/NZS 3190. MCBs to 4.5kA or 6kA rated.

2.6 WALL BOXES

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal, all screw fixed.

2.7 SWITCH UNITS

Single pole switches to be sixteen amp minimum rated, double pole or intermediate to be 10 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2 way units.

2.11 SURGE PROTECTION

Protection for the homes appliances with medium surge protection devices fitted to the switchboard. For variable electronic equipment fit fine surge protection to switched socket outlets.

2.19 EMERGENCY LIGHT FITTINGS

To AS/NZS 2293.1 Emergency escape lighting and exit signs for buildings - System design, installation and operation. Exit, recessed, ceiling or wall mounted. Refer to SELECTIONS.

2.20 SPACE HEATERS

Fixed wired room heaters for controlled displacement of warm air, and compliant with AS/NZS 3350. Flush or surface mount, fitted with safety cut-outs.

2.21 EXHAUST FANS

Ceiling or Wall mounted exhaust fans for controlled replacement of surrounding air, and compliant with AS/NZS 3350, externally ducted.

2.22 HEATED TOWEL RAILS

Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with AS/NZS 3350, scratch resistant powdercoated or chrome finish.

3. EXECUTION

3.1 MAIN SUPPLY

Lay underground mains to the network utility operator's requirements. Excavate trench, install cable and marker tape and backfill.

3.4 CIRCUIT PROTECTION

Install MCBs at distribution board to AS/NZS3000 to protect each final sub circuit.

3.5 EARTH BONDS

Bond together and to earth all plumbing fittings not adequately isolated, to AS/NZS 3000, the Electricity Regulations 1997 and the fitting manufacturer's requirements.

3.7 EARTH LEAKAGE PROTECTION

Install RCD protection to AS/NZS 3000.

3.8 DOMESTIC INSTALLATIONS

Install 30mA RCD protection at the distribution board for all final sub circuits to control socket outlets and lighting except for fixed or stationary cooking equipment.

3.9 HIGH RISK AREA INSTALLATIONS
Install 30mA RCDs at the distribution board for areas not covered in Domestic installations, or using fixed wired RCD protected socket outlets in areas that may represent increased risk of electric shock to the user:
- Wet areas: bathrooms, laundries, kitchens.

3.10 SET-OUT
The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.11 CABLING
Install wiring systems to AS/NZS 3000.3. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

3.12 CABLING CIRCUITS
Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

3.13 WALL BOXES
Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.23 RADIANT FLOOR HEATING
Install to the heater manufacturer's requirements, and to AS/NZS 3000. Fit neatly and without damage to surrounding finishes. Ensure control switches and thermostats are fitted to appliance, or otherwise connect to a control switch located adjacent to the heater and a remote thermostat.

3.25 SURGE PROTECTION
Install surge protection devices to manufacturer's requirements and in accordance with AS/NZS 3000. When fitting medium protection at the switchboard, protect the device by a dedicated MCB.

3.36 COMPLETION
Leave installation operating correctly, with equipment clean and all lamps operational.

4. SELECTIONS

Materials

4.4 RADIANT FLOOR HEATING
Location: ~
Brand / type: ~

4.7 INTERIOR OUTLETS
<u>Item</u> <u>Brand / type</u>

Thermostat: ~ Honeywell

Item	Brand / type
????????:	~
Timer switch:	~

4.12 MISCELLANEOUS ITEMS

Item	Brand / type
????????:	~

Undercarpet

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Undercarpet Heating

A constant, reliable and completely controllable source of heat which takes no space at all.

Warmup Heating Systems' wafer-thin undercarpet heater fits between the carpet and the underlay. It comes in a number of shapes and sizes designed to fit virtually every room. If it wasn't for the lovely warm feeling in the room, you would never know it had been fitted. Manufactured at WARMUP's own production facility, WARMUP undercarpet heaters are a result of more than two decades of advanced research and development.

Warmup undercarpet heaters have the following features:

- Nine different shapes & sizes
- Wafer-thin to fit between the carpet and the underlay
- Allergy conscious
- Meet New Zealand Standards
- The Warmup undercarpet heaters have a lifetime warranty

Warmup offers two options for undercarpet heating:

- A fully installed service available from one of the 17 Warmup distributors throughout New Zealand. Each distributor takes ownership of the project from the planning stage to the thermostat fit off.
- All distributors have the ability to offer a full install service for a brand new carpet or provide an option of retro-fitting under an existing carpet.

For the trade professional : The undercarpet heating kit has the folowing components:

- Undercarpet heater, choice of eight sizes
- Instruction manual
- Two year warranty

undercarpet heating

Enhance the natural beauty and warm appeal of carpet with the comfort, safety, and efficiency of a tried, tested, and proven heating system.

product description

WARMUP Undercarpet Heating is a system of low temperature, electric radiant heating mats laid between the carpet and the underlay. The result is extremely luxurious, safe, and efficient heating.

The heaters consist of an ultra thin heating cable encased between layers of foil laminate. The WARMUP Undercarpet Heating system is available in a range of factory assembled sizes and shapes.

The number and size of mats required will be determined by heat load requirements and practical considerations (such as furniture placement etc). Generally 50-70% of the total carpeted area should be covered to provide adequate room heating.

Connection to power is made via the cord which runs from the mat up to the floor surface, and either wired internally to a thermostat or similar controller.

WARMUP's proximity to the carpet surface results in a significantly reduced response time in comparison with other in-floor heating systems. As such, maximum efficiency can be achieved by control with a thermostat with floor limiter.

Specifically designed for comfort and safety, the WARMUP Undercarpet Heating system is an excellent, affordable and extremely safe method of underfloor heating.

technical specifications

Internal Element: Consists of a resistance wire spirally wound over a high-tensile rayon core, and covered with a tough outer polyethylene film. Tested to a minimum of 50,000 flexings without failure, this element has exceeded stranded elements in the same flexing test by over 500%. The internal cushion provided by the rayon core results in a highly resilient element with a high resistance to crushing.

Internal Insulant: The polymer insulant coating specifically developed for WARMUP® heating systems utilises space age technology which features long life at high temperature and excellent resistance to abrasion, mechanical damage and chemical attack.

External casing: Comprises an aluminium foil laminate with a tough outer film of polyethylene designed for high resistance to scuffing and general wear and tear. The inner aluminium layer facilitates heat transfer between the heating element and carpet, whilst doubling as the earth shield for the heater. It is completely waterproof.

Suitability: This type of undercarpet heating is suitable for use between most carpets and underlays sold in New Zealand. It is not suitable for foam-backed or rubber- backed carpets. Underlay used should be of good quality. Where possible, heaters should not be positioned under furniture as some of the benefits will be lost. The heaters are not suitable for stairs. They should not be folded.

Safety Features: In addition to the double insulation and earthing properties already incorporated, the internal insulant used exclusively by WARMUP heating systems provides an inherent overheating protection system. Should the heater overheat (through misuse or excessive lagging), the insulation, by design, allows electrical leakage to the earthed foil laminate casing. This activates the earth leakage relay at the distribution board, stopping the flow of electricity to the heater.

Further to this all WARMUP undercarpet installations include floor temperature sensing over controls as backup to the inherent features.

Safety Standards:

- Full compliance with all appropriate NZ / AUST safety standards including interim standard NZS6110 clause 1.7.8 protection against overheating. June 2004.
- All components comply with the stringent International Electromagnetic Compatibility (EMC) Standards.
- Complies with all applicable New Zealand, United Kingdom, South African, and European Community safety standards.

running costs

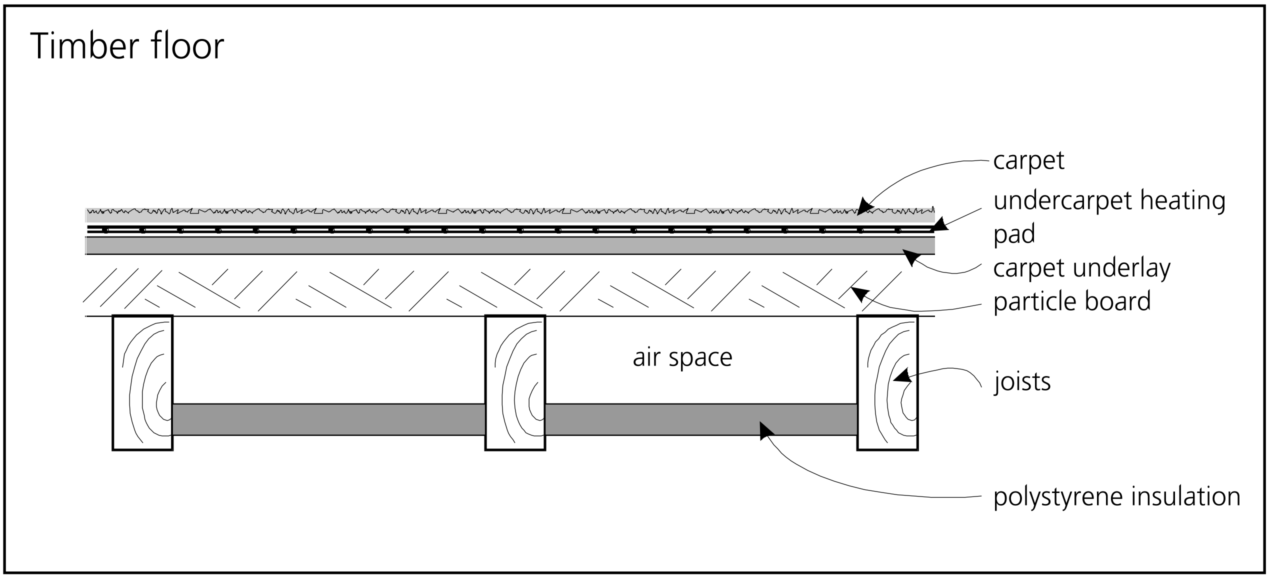
WARMUP heating mats are laid exactly where heating is required, allowing a considerable reduction of energy wastage. Response time of the heating element to the carpet surface is within 5 minutes depending upon the underlay and carpet type. The power drawing will vary between 40 and 100 watts per square metre of floor area, with an average installation of 80 watts per square metre. Actual maximum running costs per hour can be calculated at time of quotation and will vary due to differing power charges nationwide. Reductions in running costs per hour will be achieved with the use of thermostats. Typically, however, a temperature setting on a radiant heated floor can be set to run at 2-3°C lower than conventional air circulating systems without causing any reduction in comfort levels. A 1°C reduction in thermostat setting can result in up to a 5% saving.

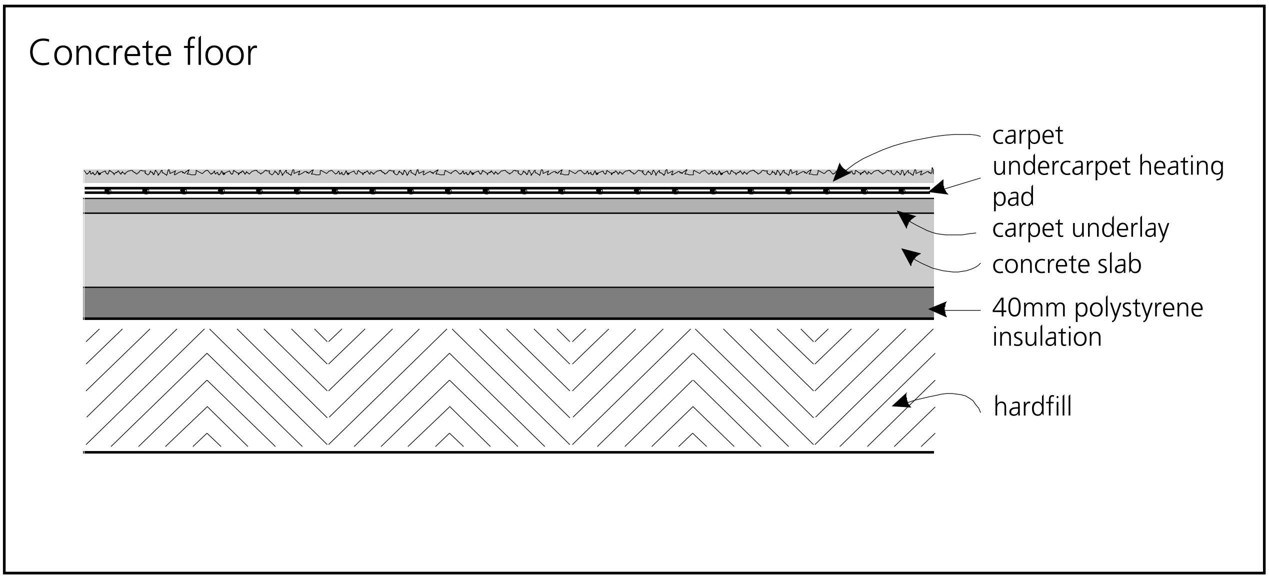
installation

Preparation required

1. Discuss your heating requirements with your WARMUP Professional as early as possible. Depending upon what stage we are involved, we can suggest the most practical, fit for purpose controls that will suit you particular needs.
2. WARMUP Undercarpet heating is actually installed at time of carpet laying - placed between carpet and underlay but the pre-wire can be done with the rest of the house hold pre-wiring (new house) or at the time of installing the heating (retro fitting).

Undercarpet Cross Section
Timber & Concrete Floor





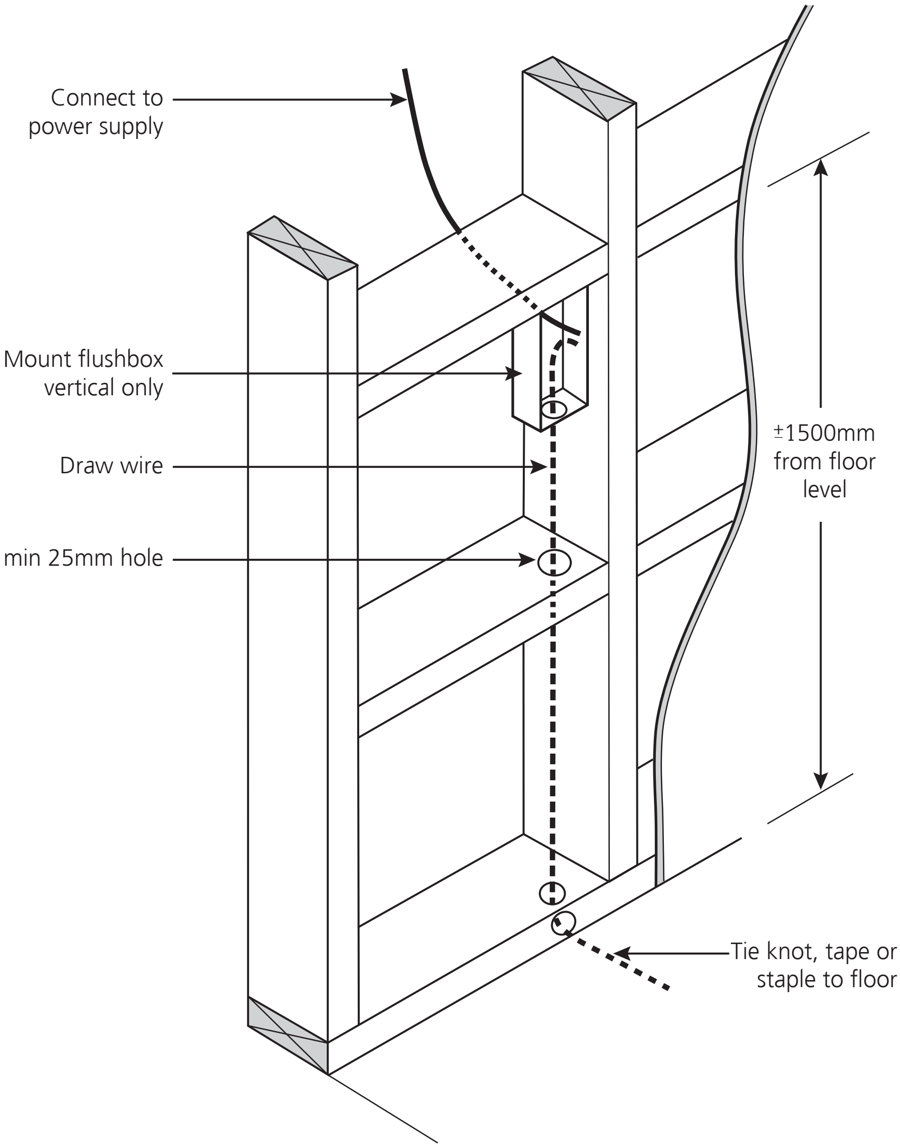
WARNING - Electrical Requirements

Please pass onto your Electrician

warmup® Est. 1994
Underfloor heating | Tiled shower solutions

483A Rosebank Road
PO Box 19-144, Avondale
Auckland, New Zealand
T: 0800 927 687
F: 09 820 7090
www.warmup.co.nz

Cross section for pre-wire requirements of undertile and undercarpet heating systems



Notes:

1. All our controllers are designed to fit Vertical wall bracket.
2. Height off the floor for flush boxes or wall bracket can vary with controllers.
3. The use of a draw wire or conduit is preferred. Ensure that it has a clear passage from floor to vertical wall bracket.
4. If any queries please do not hesitate to contact us on 0800 927 687.

Inslab heating

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inslab heating

a) the use

Inslab heating consists of an electric heating element positioned within the concrete slab. Inslab heating is not suitable for providing rapid response heating – rather its ideal use is in providing gentle background warmth by heating up the whole concrete slab. It is ideally suited for heating polished or coloured concrete floors, or when using heating in conjunction with particular types of wooden flooring. Proper installation and correct control and operation will ensure economical use - especially if used in conjunction with off peak power.

Electric inslab heating provides you with individual control per room and the flexibility to install heating in all or only selected rooms in a home.

b) the installation

WARMUP's Inslab elements are designed for installation within the concrete slab. The element wire is tied to the reinforcing mesh of the concrete floor prior to it being poured. The elements consist of fixed length earth-screened electric heating cables of large diameter (approximately 6.2mm) with factory-fitted cold tails for connection to supply. The heating wire is encased in a tough insulation, is then covered with metal braiding – providing an electrical earth and added protection. A super tough PVC outer shield then provides further insulation and protection. The result is a super tough element capable of withstanding the rigors of a typical concrete pour. The resistance wires are factory terminated in a waterproof joint assembly to the supply conductor and earth conductor of the cold tails respectively.

Typical design wattage is 150 watts per square meter. Our cable spacing can be varied from between 150mm and 300mm depending upon requirements but is typically around 180mm.

All installations should be protected by a RCD (Residual Current Device).

c) preparation

Inslab heating is tied to the reinforcing mesh of your concrete slab. Because it is encased in concrete with no room for second chances it is important that the preparation is correct.

1. The floor slab <u>must</u> be insulated. 25mm "S" grade polystyrene will provide adequate insulation in most instances. Installed over the moisture barrier, and held in place by the reinforcing mesh – it is a must have for the economic operation of your heating.
2. The floor must be marked out showing all relevant walls, and possible fixtures to floor ie floor lighting or mid room power points.
3. It is very much our preference not to have structural concrete cuts in any heated areas. If they must be done, however, they should be clearly marked on the floor as such and should be no deeper than 20mm.
4. Thermostat position. We require a termination point for the elements within the room to be heated. The thermostat does not necessarily need to be positioned at this point but we will need to install a junction box close to the floor level.

5. Electrical loading. Ensure that your site electrician is aware of the heating installation, or that you have made plans for supply of the electrical load in the house.
6. If at all possible organize your concrete floor to be “pumped” rather than “barrowed” (i.e. wheel barrows). The less opportunity to damage the heating, the less chance damage will occur.

Timing of the installation: we will require one full day for each $60m^2$ of heating to be installed. Please include sufficient time for the preparation to be completed and the heating installed the day before the concrete is poured.

Prevention of accidental damage either prior to or during the concrete pour is obviously crucial to the successful operation of your heating. Whilst faults can be traced and our heating element can be repaired, common sense as well as following simple guidelines will ensure a successful installation. We do fit audible alarms that will sound if damage to the heating element occurs and check the heating prior to and following installation but prevention is far better than cure.

Damage to our elements can usually be repaired. We reserve the right to charge for fault finding and repairs if required.

d) our guarantee to you

WARMUP Heating Systems manufacture and test our heating elements to the most stringent standards. The products we use in our installations are **internationally** recognised and approved and we can confidently stand by them. We know the risks involved in installing heating and realise that second chances are not an option.

As such and in addition to our normal 20 year guarantee, we offer a *full money back guarantee* if any element installed by us does not warm your floor. (This guarantee does not cover customer or third party damage).

inslab preparation

attention: project manager

The details below are intended to ensure that your Inslab installation proceeds smoothly and without problem. We only get one attempt at the installation and your co-operation is essential to achieving the desired end result.

Job Preparation

1. We will install an electric cable approximately 6mm in diameter in the required areas of the floor. The cable is tied to the concrete reinforcing mesh at an approximate spacing of 150mm – 250mm apart. If, for some reason, (i.e. you do not have reinforcing mesh) you foresee this not working please advise us in advance.
2. We strongly recommend that slab is insulated. 25mm "S" grade polystyrene laid on top of the moisture barrier is sufficient. Insulation of the slab has a significant effect on the running cost and effectiveness of the heating.
3. The electrical loadings of the heating may be significant in relation to the power you have available. Your electrician **must** be made aware that you are installing the heating, and provision must be made to cover the appropriate power requirements.

Slab Preparation – Before We Arrive

1. The polystyrene insulation and reinforcing mesh should be installed **prior** to our arrival on site for the installation.
2. Clearly mark, using Dazzle spray or similar on the prepared slab, the actual areas to be heated. **We cannot take responsibility for positioning of the heating if the areas are not clearly marked**.
3. Clearly mark all concrete cuts – whether for expansion or cosmetic purposes. Where appropriate (across concrete cuts) we will run our heating element underneath the reinforcing mesh. This may entail cutting of the mesh in selected areas.
4. Clearly mark where the electrical controls are to be positioned. If no areas are marked we will make a "best guess" but take no responsibility for it being correct.

Electrical Circuit Wiring

1. The elements, once installed, will be given a full electrical check and unless specified will be rechecked following the concrete pour, and following any concrete cutting.
2. The heating, once installed, will be fitted with audible alarms. These alarms are designed to detect most but not all types of damage. Care and common sense must be employed when working over the elements. Should the alarm sound, please contact us immediately
3. We have not quoted for the supply and installation of any circuit wiring as it is typically less expensive for your site electrician to do. This includes actual positioning up the wall (once constructed) of our element tails. We will happily meet your electrician on site in order to confirm requirements. Please contact us prior to the pre-wiring stage so we can confirm requirements with the site electrician. If you prefer us to undertake this work we will quote accordingly.

Commissioning

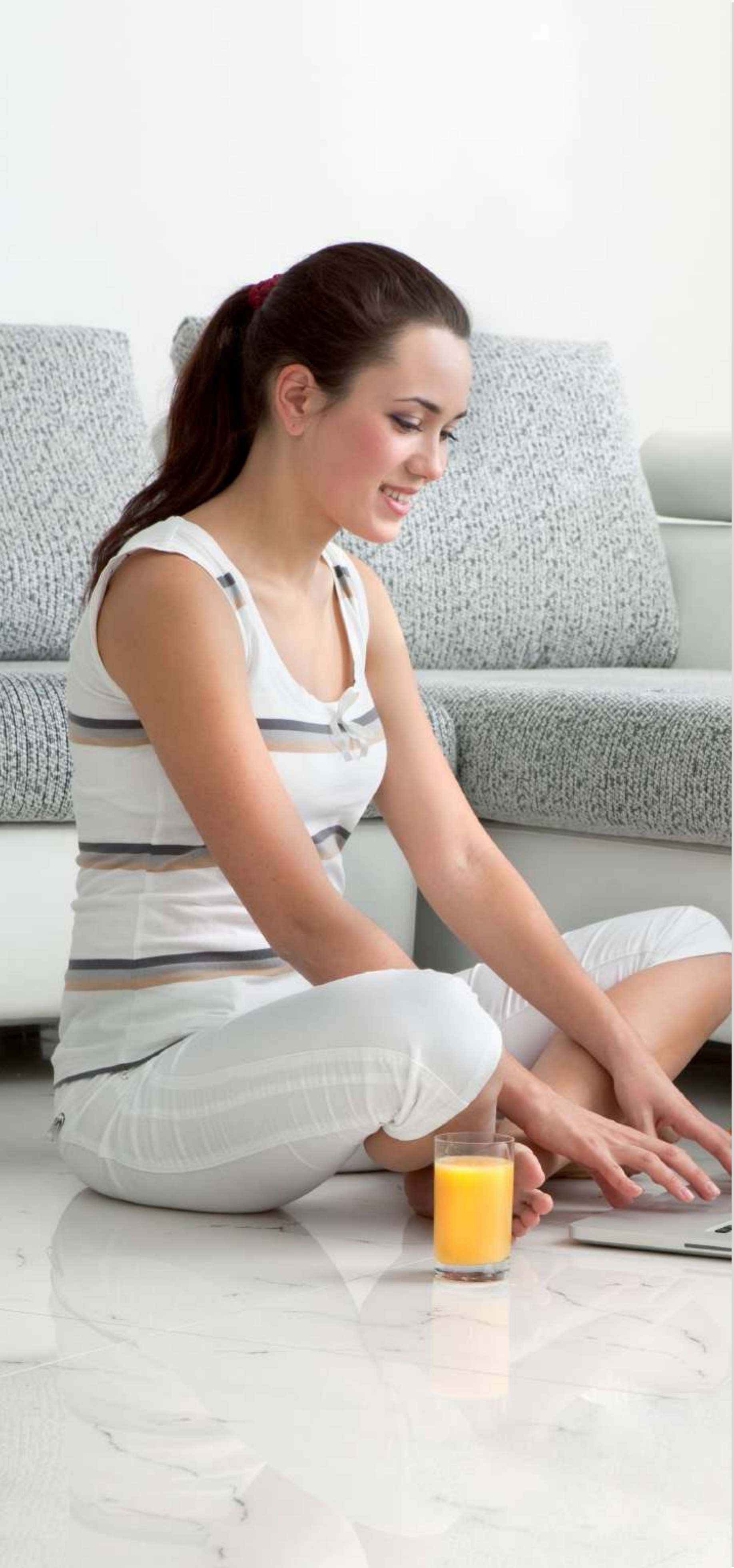
1. Once the house is nearing completion please contact us for a final element check and installation of the controllers. All electrical work should already be completed as agreed per point "3.3" above.
2. We welcome the opportunity to go over the final installation and operation of the heating with the owners to ensure the correct and most economical operation. Please feel free to contact us accordingly.

   Please do not hesitate to call us if you are unsure about any of the above details.

Inslab

Underfloor heating | Tiled shower solutions

PRODUCT	DESCRIPTION	LENGTH IN METERS	WATTAGE
W4500	INSLB 500	17	500
W4750	INSLB 750	25	750
W41050	INSLB 1050	35	1050
W41300	INSLB 1300	43	1300
W41600	INSLB 1600	53	1600
W41920	INSLB 1920	64	1920
W42580	INSLB 2580	86	2580
W43060	INSLB 3060	102	3060
W44000	INSLB 4000	133	4000
W45000	INSLB 5000	166	5000



Warmup thermostats are constructed using high quality components and have been selected for their ease of use, functionality and good looks.

Thermostats

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Our Range

Programmable

W3115DT & W3115DT Black

Dimensions: 120 (h) x 80 (w) x 37mm (d)

- Programmable or non-programmable
- 3 control modes - Air, Floor & Air+Floor
- For underfloor heating and heated towel rail control
- Built-in air temperature sensor and external floor temperature sensor
- Floor model with floor sensor connector enables precise control of floor temperature for undertile heating
- Large, backlight LCD features intuitive programming icons
- 2 part design - Removable front face and switching module

W3WT01 & W3WT02 (Wi-fi enabled)

Dimensions: 115 (h) x 84 (w) x 40mm (d)

- Built-in clock/calendar with battery backup
- Includes 4 and 6 event program for automatic comfort and setback temperature.
- Up to 7 different program combinations can be created.
- Energy use – The Energy use function uses data to calculate electricity consumption and the cost of heating over a given period.
- For individual control or heating zone control.

The W3WT02 Model with Wi-Fi Technology

- Remote access and control via the user-friendly app.
- Simple set-up with an installation wizard
- The W3WT02 model includes Wi-Fi capability

Non-Programmable

W3MTC-1991-WU(floor) / W3MTC-1999UCH(air)

Dimensions: 115 (h) x 84 (w) x 50mm (d)

- Remote floor sensor which is designed to meet the standard requirements for comfort, safety and energy saving.
- Locking mechanism behind the control knob to limit the amount of adjustment possible.
- The perfect solution for budget-conscious users.

Tiled Showers

warmup®
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Tiled Shower Solutions

The Warmup Tiled Shower Solution is a totally integrated and waterproof bathroom wet area solution that is designed, installed and guaranteed to last.

It has been developed to meet the demands and needs of specifiers, installers and home owners who want to have confidence in a totally waterproof, peace-of-mind wet area in their bathroom that uses only proven, tested, appraised and code compliant components, licensed installers and is fully guaranteed.

We offer unrestricted shower size; a variety of waste options, including channel drains; insulating/acoustic underlay and of course Warmup undertile heating. Not only do we remove the risk but through the use of well thought out procedures and products we can do it in an impressively short time frame.

Refreshingly Affordable

The Warmup Showers and Wetrooms are designed with simplicity in mind using the latest technology to deliver quality products at exceptional value

- Custom built including 10mm glass
- Entire bathroom completely waterproofed, ready-to-tile over within 24 hours
- 316 stainless steel channel drain and centre waste options
- BRANZ appraised
- 15 year warranty on product and installation

6812W WARMUP WETROOM SYSTEM

1. GENERAL

This section relates to the supply and installation of **Warmup™ wetroom system** comprised of interior tiled shower and wet areas supplied and installed by **Warmup New Zealand Ltd** or Warmup authorized distributor.
It includes:
- underlay
- waterproofing membrane
- tiled wet areas and showers including proprietary shower tray, wastes, drains, shower screens and glass, fittings and accessories
- undertile heating and thermostat control

1.1 RELATED WORK
Refer to 6221 ARDEX TILING SOLUTIONS for the .supply and installation of ceramic and stone tiles.

Documents

1.2 DOCUMENTS
Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E3/AS1	Internal moisture
NZBC G9/VM1	Electricity, 1.0 Electrical installations
AS/NZS 1860.1	Particleboard flooring - Specifications
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 2588	Gypsum plasterboard
AS 3740	Waterproofing of wet areas within residential buildings
NZS 4223.3	Glazing in buildings - Human impact safety requirements
AS/NZS 4858	Wet area membranes
AS/NZS 60335.2.96	Household and similar electrical appliances - Safety - Particular requirements for flexible sheet heating elements for room heating.
NZS 6110	Electrical installations - floor and ceiling heating systems
ASTM C630/C630M-96a	Water-resistant gypsum backing board
BRANZ	Good practice guide: Tiling

Electricity (safety) Regulations 2010
New Zealand Electrical Codes of Practice

1.3 MANUFACTURER/SUPPLIER DOCUMENTS
Warmup New Zealand Ltd documents relating to this part of the work:
Warmup™ product technical data sheets
Warmup™ Wetroom technical literature
BRANZ Appraisal 644 - Warmup Undertile Heating
BRANZ Appraisal 774 - Warmup Wetroom System
BRANZ Appraisal 727 - Ardex WPM750 Undertile Butynol
Ardex WPM750 Undertile Membrane technical literature

Manufacturer/supplier contact details

Company:	**Warmup New Zealand Ltd**
Web:	www.warmup.co.nz
Email:	levi@warmup.co.nz
Telephone:	09 820 2500

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER
Provide a Warmup™ manufacturer/supplier warranty:

15 years:	For Warmup™ Insulation Board

15 years: For Warmup™ WPM750 Undertile Butynol
15 years: For Warmup™ Shower drain clamp waste
15 years: For Warmup™ Square drains and channel (strip) drains
15 years: For Frameless glass screens, fittings and accessories

Lifetime warranty: For Warmup™ Undertile heating elements
5 years: For Warmup™ Undertile heating controllers

- Provide this warranty on the Warmup™ New Zealand Ltd standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR
Provide a Warmup™ installer/applicator warranty:
15 years: For Warmup™ Wetroom System

- Provide this warranty on the Warmup™ New Zealand Ltd standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS - GENERAL
Workers to be experienced, competent trades people familiar with the materials and techniques specified.

1.7 QUALIFICATIONS - WATERPROOF MEMBRANE
Installers of Warmup™ WPM750 Undertile Butynol to also be Ardex approved applicators.

1.8 WORK BY WARMUP
Supply and installation of Warmup™ Wetroom System to be carried out by Warmup New Zealand Ltd, or Warmup™ authorized distributor, except for the following:
- installation of shower drain clamp waste
- installation of square drains and channel (strip) drains
- supply and installation of tiles
- installation of electrical connection of heating controllers (thermostats).

1.9 NO SUBSTITUTIONS
Substitutions are not permitted to any of the specified Warmup™ systems, components and associated products listed in this section.

Compliance information

1.10 INFORMATION REQUIRED FOR CODE COMPLIANCE
Provide the following compliance documentation: -
- Manufacturer's warranty
- Manufacturer's, importers or distributors warranty
- Installer's / applicator's warranty
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.11 QUALITY ASSURANCE
Maintain quality necessary to assure that work is performed in accordance with this specification and qualifying requirements of Warmup New Zealand Ltd.

1.12 INTERNAL / EXTERNAL MOISTURE
Wet area membranes under tiled areas to AS 3740, NZBC E3/AS1 and to BRANZ Good Tiling Practice.

1.13 ELECTRICITY
Comply with Electricity (Safety) Regulations 2010, NZBC G9/VM1 Electricity, 1.0 Electrical installations, New Zealand Electrical Codes of Practice, NZS 6110 Electrical installations - floor and ceiling heating systems and AS/NZS 60335.2.96 Household and similar electrical appliances - Safety - Particular requirements for flexible sheet heating elements for room heating.

2. PRODUCTS

Materials - substrate linings

2.1 COMPRESSED FIBRE CEMENT SHEET
18mm thick high density sheet of Portland cement, fine sand, cellulose fibre and water, with a smooth finish both sides.

2.2 FIBRE CEMENT FLOOR AND WALL OVERLAY/UNDERLAY
6mm or 9mm thick sheet of Portland cement, sand, fine cellulose fibre and water, with a smooth finish.

2.3 CONSTRUCTION PLYWOOD
Rotary cut radiata pine veneer ply, face sanded, treated H3 for wet areas and to AS/NZS 2269.0.

2.4 PARTICLEBOARD
Medium density resin bonded to AS/NZS 1860.1.

2.5 GYPSUM PLASTERBOARD - WATER RESISTANT
Gypsum plaster core containing a wax emulsion encased in a durable face and backing paper formed for standard and fire rated use to AS/NZS 2588 and for water resistance use to ASTM C630/C630M-96a.

Tiles

2.6 TILING
Refer to 6221 ARDEX TILING SOLUTIONS for tiles, adhesives and installation of tiles.

Floor levelling compound

2.7 FLOOR LEVELLING COMPOUND
Warmup™ Thermal Screed.

Primer

2.8 PRIMER
Warmup™ proprietary primer.

Tile underlay

2.9 TILE UNDERLAY AND SHOWER TRAY
Warmup™ Insulation Board (by Marmox), a cement reinforced waterproof underlay, available in sheets 1250mm x 600mm x 6mm or 10mm thick. Shower trays have a high density topping, sized to suit the application, with an in-built preformed fall to waste of 1:50 for point drains and 1:100 for channel drains.

Waterproofing membrane

2.10 SHEET WATERPROOFING MEMBRANE
Warmup™ WPM750 Undertile Butynol (by Ardex), a single ply sheet membrane, to AS/NZS 4858, available in rolls 1.4m wide x 20m long x 0.5mm thick.

Adhesives

2.11 ADHESIVE - SOLVENT FREE
Warmup™ proprietary adhesive.

2.12 CATALYST - SOLVENT FREE
Warmup™ proprietary catalyst.

Sealants

2.13 PROPRIETARY SEALANT
Ardex CA20P proprietary sealant.

Anti fracture membrane

2.14 ANTI FRACTURE/UNCOUPLING MEMBRANE
Warmup™ WPM750 Undertile Butynol (by Ardex), a heat weldable single ply sheet membrane, to AS/NZS 4858, available in rolls 1.4m wide x 20m long x 0.5mm thick. Acts as an anti-fracture/uncoupling membrane.

Acoustic underlay

2.15 ACOUSTIC UNDERLAY
Regupol® 4515, Impact Sound Acoustic Underlay, comprised of PUR-bound cork particles and PUR-foam, tested to AS/ISO 717.2 and AS/ISO 140.6, available in sheets 3mm - 9mm thick.

Undertile heating

2.16 HEATING ELEMENTS
Warmup™ heating elements, 2.2mm in diameter comprised of double insulation, full screen earth, teflon primary and multi-stranded heating conductors. Tested to AS/NZS 60335.2.96. Available in a number of lengths, wattages and coverage. Refer to SELECTIONS for options.

2.17 THERMOSTATS
A range of Warmup™models of programmable and non-programmable temperature controllers available with Warmup™ Undertile System.

Accessories - Warmup™ wetroom system

2.18 CLAMP WASTE
Warmup™ Clamp Flange, moulded PVC-U, supplied 75mm in diameter (overall flange diameter 180mm).

2.19 SHOWER DRAINS
Warmup™ 316 stainless steel drain range, available in standard drain range - square and channel drains (7 styles), centre or off centre point drains, and offset or full length channel drains. Refer to SELECTIONS for style and size options.

2.20 FRAMELESS GLASS SHOWER SCREENS
Frameless glass shower screen, comprised of 10mm thick A grade toughened safety glass, to NZS 4223 3 and AS/NZS 2208, custom made to fit the application. Incorporates pre-channelling for glass installed prior to tiling. Refer to SELECTIONS for details.

2.21 SHOWER NICHES
Warmup™ Shower Niches, available in various sizes, refer to SELECTIONS for range.

2.22 ELEMENT MONITOR
Warmup™ "Watchdog" audible alarm connected to the heating element during tiling to advise of any adverse treatment. Once installed the alarm must be left "ON" until removed.

Thermostat controls

2.23 THERMOSTAT - PROGRAMMABLE
Warmup™ TH115 with on/standby switch, remote input, on-screen heating command indicator, temporary bypass and floor model with easy access floor sensor connector (and air, floor or air with floor limitation).

2.24 THERMOSTAT - NON-PROGRAMMABLE

Warmup™ MTC, electronic thermostat with remote floor sensor and locking mechanism.

Accessories - general

2.25 STRIPS, WEATHER BARS AND EXPANSION JOINTS
Refer to 6221 ARDEX TILING SOLUTIONS tiling section.

3. EXECUTION

Conditions -general

3.1 DELIVERY, STORAGE AND HANDLING
Take delivery of materials and goods and store on site and protect from damage.
Protect finished surfaces, edges and corners from damage.
Move/handle goods in accordance with manufactures requirements.
Reject and replace goods that are damaged or will not provide the required finish.

3.2 COMPLY
Comply with AS 3740 and the requirements and instructions of Warmup New Zealand Ltd.

Conditions - substrate

3.3 CHECK SUBSTRATE
Ensure that substrate is level, not subject to movement, deflection and is structurally sound. Ensure all surfaces are clean dry and free from dust and dirt, oil and grease with no projection of sharp materials. Complete all remedial work before commencing installation.

3.4 SURFACE PREPARATION
Ensure surface to receive Warmup™ insulating board is clean, dry and free of any foreign matter that may adversely affect the adhesion of the membrane. Do not use the products in the following situations:
- areas subject to negative hydrostatic pressure or rising damp
- when the substrate is wet
- where the substrate temperature is below 10°C or above 35°C.

3.5 SUBSTRATE - CONCRETE
Ensure slab is level, smooth, clean, cured for a minimum of 28 days, and dried to a relative humidity not exceeding 65% or until the moisture content does not exceed 5.5%. Add cure and seal catalytic agent to concrete or seal as required. Remove loose material and dust.

3.6 SUBSTRATE - FIBRE CEMENT SHEETING
Ensure fibre cement sheeting is wet area grade and suitable for the membrane installation. Check that fixing, thickness and sheet layout is in accordance with manufacturer's requirements.

3.7 SUBSTRATE - PLYWOOD
Ensure plywood is a minimum of 17mm thick structural grade treated to H3.2 (CCA treated) with support framing a minimum of 400mm centres in both directions and moisture content less than 20% before commencing installation. LOSP treated plywood not to be used.

3.8 SUBSTRATE - PARTICLE BOARD
Ensure particle board is wet area grade and suitable for the membrane installation. Check that fixing, thickness and sheet layout is in accordance with manufacturer's requirements.

3.9 SUBSTRATE - PLASTERBOARD
Ensure plasterboard is wet area grade and suitable for the membrane installation. Check that fixing, thickness and sheet layout is in accordance with manufacturer's requirements. Ensure plasterboard is stopped before commencing installation. Must only be used for wet area walls not included in shower enclosure area.

Installation - tiles

3.10 INSTALL TILES
Refer to 6221 ARDEX TILING SOLUTIONS tiling section for installation of tiles, adhesives, grouting, movement joints, sealants and accessories.

Installation - anti fracture membrane

3.11 INSTALL ANTI FRACTURE/UNCOUPLING MEMBRANE
Install Warmup™ WPM750 Undertile Butynol (by Ardex), in accordance with manufacturer's requirements.

Installation - acoustic underlay

3.12 INSTALL ACOUSTIC UNDERLAY
Install Regupol® 4515, Impact Sound Acoustic Underlay, in accordance with manufacturer's requirements.

Installation - Warmup™ wetroom system

3.13 INSTALL WARMUP WETROOM SYSTEM
Install Warmup™ wet room system in accordance with Warmup™ installation instructions. Application includes:
- Level entry (set down) shower on concrete or timber
- Threshold shower on concrete or timber.

3.14 INSTALL WASTE OUTLET
Install Warmup™ Shower Drain Clamp waste outlet and set top surface flush with the surface receiving the Warmup™ WPM750 Undertile Butynol (by Ardex) application. Complete with shower gully trap and selected Warmup™ shower drain.

3.15 INSTALL UNDERLAY
Lay Warmup™ Insulation Board (by Marmox) in accordance with Warmup™ installation instructions, glued and screwed on timber floor or adhesive fixed with Warmup™ proprietary flexible tile adhesive.

3.16 INSTALL WATERPROOFING MEMBRANE
Roll out Warmup™ WPM750 Undertile Butynol (by Ardex) and cut to measured length. Install membrane under the pre-formed shower tray. Smooth the membrane on contact to minimize air entrapment beneath the membrane. Apply adhesive between the clamp waste and membrane prior to clamping.

Extend membrane up wall at least 150mm. Ensure membrane is laid tightly into corners. Overlap wall sheets to the 150mm upstand. Weld seams and laps with the Leister Triac S hot air gun. Roll with rubber roller to ensure seams and laps are secure.

3.17 INSTALL SHOWER TRAY
Position Warmup™ Insulation Board (by Marmox) shower tray using Warmup™ proprietary flexible adhesive. Lay tray level with falls to waste (1:100 for channel drain, 1:50 for centre or off-centre waste). Seal all joints between substrate and waterproofing using Warmup™ proprietary sealant.

3.18 INSTALL SHOWER THRESHOLD
Adhesive fix Warmup™ Insulation Board (by Marmox) threshold using Warmup™ proprietary flexible adhesive. Ensure all joints between tray and threshold are sealed.

3.19 INSTALL GLASS CHANNELLING
Adhesive fix proprietary glass channelling to the inside upper edge of the threshold and up the walls to height as shown on the drawings. Install channels flat, level and plumb.

3.20 INSTALL FRAMELESS GLASS SHOWER SCREEN
Install frameless glass shower screen and accessories in accordance with the manufacturer's installation instructions.

Conditions - undertile heating

3.21 GENERALLY
All work and materials to be in accordance with Warmup™ undertile heating installation instructions.

3.22 CONFIRM LAYOUT
Before commencing work confirm the proposed location of heating cables and controls.

3.23 CO-ORDINATE SERVICES
Co-ordinate and co-operate with other sub-trades to avoid any conflict with the installation of the system with other subcontractors work.

Installation - undertile heating

3.24 PRELIMINARY WORK
Clean and prime floor prior to installing the heating cables. All fixings such as door stops and floor mounted cabinetry to be clearly marked out on the floor.

3.25 INSTALL UNDERTILE HEATING
Install Warmup™ undertile heating system in accordance with Warmup™ installation instructions,ensuring as much of the floor area is covered in each of the zones shown on the plan / Warmup™ schedule.

Install Warmup™ "Watchdog" audible alarm must be installed and remain turned on until tiling, grouting and all perimeters and movement joints are sealed. Electrical connection of heating controller must be carried out by registered electrician once tiling is completed.

Installation - thermostat controls

3.26 INSTALL THERMOSTAT SENSORS
Install thermostat sensors for each zone in accordance with the Warmup™ schedule. Install sensors within a conduit so they are easily replaced after completion. For a timber floor install the sensor higher than the heating cables / directly under the flooring.

3.27 COMMISSION
Allow to commission the system fully toWarmup™ instructions.

3.28 TEST ALL ELEMENTS
All elements to be tested for continuity, resistance and insulation resistance prior installation of flooring, and after installation and prior to livening. Fill out the pre and post floor placement test result sheets and forward these results to the owner. It is recommended that all elements are tested at prewired stage of the installation.

3.29 TEST AND ACTIVATE ALL CONTROLS
All thermostats to be activated and checked for correct operation. Where programmable or intelligent thermostats are installed the correct day and time to be programmed in. Once these thermostats have been checked, leave in manual and off unless instructed otherwise.

3.30 TIMBER FLOORS
For timber overlay floors ensure:
- If a moisture test has not been carried out, turn off the underfloor heating 1 week prior to the test.
- Turn off underfloor heating during and for 48 hours either side of the flooring work period.
- Post flooring installation, turn on heating with thermostat set at 5°C and increase by 5°C increments daily, until desired maximum temperature is reached.
- Ensure the thermostat is fitted with a maximum temperature of 27°C.

3.31 CONNECTION TO POWER SUPPLY
Connect from wall mounted flush box to power supply protected by an RCD. Refer to the appropriate electrical section for electrical connections of the heating mats.

Completion

3.32 ROUTINE CLEANING
Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

3.33 DEFECTIVE OR DAMAGED WORK
Repair damaged or marked components. Replace damaged or marked items where repair is not possible or will not be acceptable. Leave work to the standard required for following procedures.

3.34 PROTECTION
Provide temporary protection of the finished work:
Warmup™ Wetrooms unsuitable as a trafficable surface.
~

4. SELECTIONS
For further details on selections go to www.warmup.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 TILES
Refer to 6221 ARDEX TILING SOLUTIONS tiling section.

Undertile heating

4.2 HEATING ELEMENTS
Location: ~
Brand: Warmup™
Area: ~
Coverage: ~

Warmup™ wetroom system

4.3 WARMUP WETROOM SYSTEM
Location: ~
Brand: Warmup™
Tile underlay: Warmup™Insulation Board (by Marmox) ~
Waterproofing membrane: Warmup™ WPM750 Undertile Butynol (by Ardex)
Sealant: Ardex CA20P proprietary sealant
Clamp waste: Warmup™ Shower Drain clamp waste
Shower drains: Warmup™ stainless steel ~
Shower screen: Warmup™ ~
Shower fittings: Warmup™ ~
Shower niches: ~

Thermostat controls

4.4 THERMOSTAT - PROGRAMMABLE

Location:	~
Brand:	Warmup™ TH115
Type:	~

4.5 THERMOSTAT - NON-PROGRAMMABLE

Location:	~
Brand:	Warmup™ ~
Type:	~

Running Costs

Undertile

warmup® Est. 1994

Underfloor heating | Tiled shower solutions

Size	Wattage	Coverage area	Cost per day @ 6 hrs a day	Cost per month
Bathroom (small/medium/large)	300 - 400 watts	1.0sqm to 3.0sqm	47c - 62c	$14.00 - $19.00
	500 - 650 watts	3.0sqm to 5.0sqm	78c - $ 1.00	$23.00 - $30.00
	800 -1250 watts	5.0sqm to 9.0sqm	$1.25- $1.95	$37.00 - $59.00
Kitchen (small/medium/large)	800 - 1000 watts	5.0sqm to 7.5sqm	$1.25 - $1.56	$37.00 - $47.00
	1000 - 1250 watts	6.0sqm to 9.0sqm	$1.56 - $1.95	$47.00 - $59.00
	1500 - 1800 watts	9.0sqm to 13.5sqm	$2.34 - $2.81	$70.00 - $84.00
Lounge (small/medium/large)	1500 - 1800 watts	9.0sqm to 13.5sqm	$2.34 - $2.81	$70.00 - $84.00
	2000 - 2500 watts	13.5.0sqm to 20.0sqm	$3.12 - $3.90	$94.00 - $117.00
	2500 - 3000 watts	16.0sqm to 24.0sqm	$3.90 - $4.68	$117.00 - $140.00

- The above calculation is based @ 26c/kwatt/hr.
- We have assumed that the heating is 'ON' for 6 hours a day (3 hours in the morning and 3 hours at night).
- Cost per month has been calculated @ 31 days per month
- Every 1^{o}C reduction in the temperature setting of your thermostat will result in a 5% – 8% reduction in power usage and cost over 24 hours.
- The calculation of running costs can only be approximate. The actual cost will depend on a number of considerations – user preferences, temperature and switch-on time setpoints, cost of energy etc.

Running Costs
Undercarpet

Underfloor heating | Tiled shower solutions

Size	Wattage	Coverage area	Cost per day @ 6 hrs a day	Cost per month
Small (Bedroom)	250 - 500 watts	1.0sqm to 3.0sqm	39c - 78c	$12.00 - $23.00
	500 - 750 watts	3.0sqm to 5.0sqm	78c - $1.17	$23.00 - $35.00
Medium (Bedroom, Study, Media room)	750 -1000 watts	5.0sqm to 9.0sqm	$1.17- $1.56	$35.00 - $47.00
	1000 -1500 watts	9.0sqm to 15.0sqm	$1.56 - $2.34	$47.00 - $70.00
Large (Bedroom, Dining room, Living room, Rumpus, Family room)	1500 -2000 watts	15.0sqm to 20.0sqm	$2.34 - $3.12	$70.00 - $94.00

- The above calculation is based @ 26c/kwatt/hr.
- We have assumed that the heating is ’ON’ for 6 hours a day (3 hours in the morning and 3 hours at night).
- Cost per month has been calculated @ 31 days per month
- Every 1^{o}C reduction in the temperature setting of your thermostat will result in a 5% – 8% reduction in power usage and cost over 24 hours.
- The calculation of running costs can only be approximate. The actual cost will depend on a number of considerations – user preferences, temperature and switch-on time setpoints, cost of energy etc.