Review of Hydrotherapy & Balneotherapy

Medical Evidence for Efficacy and Systematic Literature Review

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Forward

What are the medical benefits of Hydrotherapy Treatments?

With 50 years experience in the design and installation of swimming and hydrotherapy pools, we are often asked this question. Not being medically qualified we have, up until now, been extremely cautious in our responses.

However with the growing trend towards well being and medical spas then this question is of great importance in today's market.

It therefore gives me great pleasure to thank Dr David Marshall and Fiona Russell for preparing this information report on medical evidence supporting the use of hydrotherapy in the treatment of a wide range of medical conditions.

Should you wish to discuss the contents of this report or the various types of hydrotherapy equipment supplied by B+W then my staff will be pleased to assist you.

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Hydrotherapy and Aquatic Therapy
Fiona Russell

Historical background

Records show that the use of water as a therapeutic modality dates back thousands of years. As far back as 2400 B.C. the early Egyptians used mineral waters to cure illnesses. Subsequently the Ancient Greeks used baths both for recreation and well being. Homer (850 B.C.) proposed that warm baths could be used to reduce fatigue, promote wound healing and combat dejection and low spirits. Hippocrates (370 B.C.) prescribed bathing in spring water to cure illness.

The Romans took hydrotherapy to another dimension with their skills design and construction and built immense public baths. It was common practice for Romans to first partake in exercise after which they would proceed through a series of baths. They would initially bathe in a warm pool or room (the tepidarium) then proceed to a hot bath, heated by a furnace (caldarium). They would then return to the tepidarium before ending in the cold room (frigidarium) with a cold bath. Initially baths were considered recreational centres for the pursuit of health, hygiene and intellectual activities. By 339 BC some Roman baths were used specifically for healing purposes.

In particular baths were used in the treatment of rheumatic disease, paralysis and following injury. With the decline of the Roman Empire, and the subsequent demise in morals the bathing culture fell into disrepute and the early Christians banned public bathing.
In the Middle Ages the use of water was associated with paganism and baths were banned by the Church. This aversion to water remained for many centuries with many people abstaining from bathing for months and years at a time.

Hydrotherapy did not re-emerge until the 15th, 16th and 17th centuries, when some early pioneers in the field promoted the use of hot and cold baths in the management of disease. In the late 19th century, exercise under water gained favour as a treatment modality. It was not until the 20th century however that hydrotherapy tanks were produced and the field of hydrotherapy developed further.

Today hydrotherapy in the hospital setting is defined as the use of pool therapy programmes to improve neuromuscular and skeletal function. Other interventions in use are thallasotherapy (sea therapy), defined as the use under medical supervision of the marine environment including the marine climate, seawater, mud, sand and seaweed and Balneotherapy, which is defined as the use of baths (hot or cold springs or naturally occurring waters) and other natural remedies such as mud.

Water offers a therapeutic environment completely different to that achievable on land.
Physiological effects of water

Hydrotherapy is based on the physical properties of water namely

- Heat Transfer (through the skin)
- Archimedes Forces
- Hydrostatic Pressure
- Sensory Input

Heat Transfer

When a body is immersed in water at a temperature greater than 35°C (36-40°C), heat transfer occurs from the water to the body. This leads to cutaneous vasodilation with heating of the blood circulating under the skin. Arterial blood pressure drops due to this vasodilation. Evaporation of the sweat produced as a result of this increase in temperature is impossible below the surface of the water. The core temperature therefore rises.

Immersion at temperatures below 40°C leads to stimulation of warm receptors. This leads to inhibition of the activity of γ motor neurones. This leads to muscle relaxation. An increase in the superficial tissue temperature creates a palliative effect and pain reduction may be experienced. If the immersed individual exercises, body temperature will increase even further.
Archimedes Forces

Archimedes’ principle states that when a body is wholly or partially immersed in a fluid, it experiences an upthrust equal to the weight of the fluid displaced. This upthrust is “buoyancy”, a force that counteracts gravity. The body is supported in water. The more of the body that is immersed, the more buoyancy there will be and weight bearing is further reduced. This reduction in weight bearing can offer relief from compressive forces on painful weight bearing joints. Therefore someone who generally suffers pain in their back or legs when standing or walking will find those activities much less painful under water, indeed such individuals may well be able to exercise to aerobic levels in water. Buoyancy can also promote an increase in movement where there is muscle weakness. Buoyancy can provide assistance to movement of a body in water. Buoyancy can be used to develop a graded programme of exercises, the easiest of which would be buoyancy assisted, moving to buoyancy eliminated (harder) and progressing to the hardest, buoyancy resisted.

Hydrostatic Pressure

Pascal's Law states that fluid pressure is exerted equally on all surfaces of an immersed body at a given depth. Pressure increases as depth increases. This principle can be used therapeutically to help reduce oedema and lower limb swelling (by exercising at greater depths). Hydrostatic pressure can restrict chest wall expansion, a factor important in those with reduced pulmonary function this should be taken into account. Hydrostatic pressure may be used in a progressive resistive exercise programme in such individuals.
Sensory Input

In water there may be less fear of falling as the water provides support and stability. It is much less traumatic to fall into a compliant medium (water) than a noncompliant one (ground). A less anxious person may be happier to challenge their body and therefore develop their balance and movement skills.

An immersed body will move more slowly as the viscous medium retards movement. Sensory awareness may be increased by moving through a more viscous medium, (water), compared to a less viscous medium (air). If a person moves quickly through water they produce drag or turbulence. This is another resistive force and can again be used therapeutically, for further muscle strengthening.

Taking into account these physical effects of immersion then one can plan a programme of water-based therapy to achieve various goals, that can help in both rehabilitation and in the maintenance of normal movement and function.

Hydrotherapy goals/therapeutic effects

- Improvement in strength or prevention of muscle wasting
- Improvement in flexibility or prevention of contractures; improvement in posture
- Improvement in ability to perform normal everyday activities
- Improvement in exercise tolerance
- Improvement in work tolerance or duration;
- Improvement in cardiovascular fitness
- Reduced pain
- Improvement in ability to walk normally
- Improvement in balance, reaction time, and safety during walking
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Medical Evidence for Hydrotherapy and Balneotherapy

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The major aims of hydrotherapy in the medical context is to relieve pain and increase muscular power and range of joint movement. Hydrotherapy has been a mainstay of treatment for many years in management of many medical conditions including arthritic disease, neurological conditions and in rehabilitation following sporting injuries. Review of the medical literature shows that most studies report positive findings however there are considerable methodological flaws in most of the research published. Quality of life measurements, intention to treat analysis or comparison effects between controlled group and active treatment groups are often lacking and as a result Clinicians are sceptical as to the benefits that can be obtained. Furthermore, most of these methodological flaws can be avoided and any future research should be geared towards more rigorous scientific demonstration of effect.

Nevertheless, a review of the medical databases (Mbase 1955 to 2008) reveals over 300 articles pertaining to hydrotherapy and balneotherapy. In this article, I have tried to take a cross section of the published data, concentrating on those studies with a high degree of scientific value. I have concentrated on a number of medical conditions where the literature is most compelling. These can be outlined as follows:

1. Arthritis
2. Chronic pain conditions.
3. Diseases of the nervous system
4. Cardiac disease.
5. Respiratory disease.
6. A miscellaneous group including obstetric practice, immunology, dermatology and sports medicine.

1. Arthritis
There are over 200 different forms of arthritis known however by far in a way the leading cause in world populations is osteoarthritis (OA). There are estimated to be 20 million affected individuals in the United States and most patients describe joint pain as a frequent symptom requiring medical intervention. The main site of involvement in OA include hand, knee, hip and spine. The disease results in a substantial degree of morbidity and disability and is much more prevalent amongst the elderly. It is now the leading indication for hip and knee replacement surgeries and, as the population ages, a greater burden of OA will develop. There are many different causes of OA including post traumatic (knee) disease, familial generalised OA and post inflammatory OA.

Numerous studies of hydrotherapy and balneotherapy are published in the OA field.

Bartels et al. (1) reviewed literature and published systematic review of all papers from 1945 – 2006, finally concentrating on 6 trials including 800 participants. These patients had knee and hip OA and the evidence was compelling that exercise in warm water reduces pain and improves function but did not demonstrate any effect on the progression of OA.

Brosseua (2) produced a similar review of the efficacy for balneotherapy with broadly similar results.

Yurtkuran (3) investigated the difference between balneotherapy (using spa water) and tap water in the treatment of knee osteoarthritis and revealed no difference between the two suggesting that the improvements seen were due to heat and exercise in water rather than substances contained in the water itself.

Numerous studies have assessed the effects of whirlpool spa therapy particularly for hand OA (Hoyrup) (4) Robiner (5) and have shown improvements in patient satisfaction and pain levels when dynamic rather than still water is used.
Some comparative trials published whereby hydrotherapy is compared to other land based physiotherapy exercises including Tai Chi (Fransen) (6), Silva (7), Silvesta (8), Green (9), Fransen (10), Davey (11). The land based exercises include standard physiotherapy, Tai Chi, yoga etc. Whilst the data show improvements in pain, well being and movement with hydrotherapy, there seems to be no major difference demonstrated compared with land based exercises although patients themselves expressed a preference for hydrotherapy.

The commonest form of inflammatory arthritis is rheumatoid disease which affects approximately 1% of the adult population in the United Kingdom. This is a potentially crippling illness which shortens life expectancy and significantly affects quality of life in affected patients. It is inflammatory disease of unknown cause whereby the lining of synovial joints become swollen, erodes the surrounding bone in the joint and damages tendons and ligaments. The disease affects women more than men (3:1 ratio) and the typical age of onset is in child bearing years. Hands are the major site of involvement in almost all patients with RA however any joints with the synovial lining can be affected. The disease has no known cause but results in abnormalities in the immune system and current therapies are aimed at reducing inflammation by direct affects on the body’s immunity.

All Rheumatology Departments see large numbers of patients with RA and hydrotherapy is a mainstay of therapy and has been for many years.
Verhagen (12) performed a systematic review of the literature from 1955 – 2006 and concentrated on 7 trials involving 412 patients similar to the Bartels paper in OA, the studies were flawed in design and insufficient evidence was found to show absolute benefit of hydrotherapy however there was a clear tendency for hydrotherapy to result in reduced numbers of swollen or tender joints, improvements in pain scores and patient satisfaction ratings. Particular benefit seems to arise in hydrotherapy at temperatures between 31 and 36°C and no improvements were seen when comparing spa water with tap water.

As with the OA studies, numerous research papers have concentrated on the comparison of hydrotherapy against land based exercises (Eversden) (13), Hall (14), Nicholls (15), Landewe (16) as with the OA data, there was an overall preference from hydrotherapy for patients but the studies were not powered in such a way that a definite difference could be exhibited between hydrotherapy and land based therapy.

The clinical and psychological effects of hydrotherapy in RA were investigated by Ahern (17) and demonstrated hydrotherapy having beneficial effects in patients with RA through improvements in self efficacy for function, pain and stiffness.

Ankylosing spondylitis (AS) is one of a group of inflammatory arthritic diseases with a prevalence of between 0.5% and 1.9% of the population. The main problems in this condition include arthritis of the spine, inflammation of tendons and ligaments and eventually fusion of the spine such that patients have no movement between the vertebrae. Compared with RA, AS is mainly a disease of men with a male to female ratio of between 3:1 and 9:1. Unfortunately this until recently has been a condition where medical treatments have been of limited value and subsequently hydrotherapy has been a mainstay of treatment in keeping the patients spine supple and moving and preventing fusion.
Dagfinrud (18) performed a systematic review of the literature for physiotherapy interventions in AS and showed that home based or land based exercises are better than no exercise but that hydrotherapy, in particular group hydrotherapy, was better than land based exercise alone. He assessed 11 studies including over 700 affected individuals. The overwhelming results was in favour of hydrotherapy with improvements in mobility, physical function and overall well being.

Helliwell (19) performed a randomised trial of 3 different physiotherapy regimens in AS (intensive inpatient physiotherapy, outpatient hydrotherapy with home exercises or home exercises alone). The hydrotherapy regimens produced significantly greater short term improvement in spinal movement with better subjective improvement.

Ventubergen (20) randomly allocated a group of 120 Dutch patients with AS into 3 groups 40 receiving spa therapy in Austria, 40 having spa therapy in the Netherlands and 40 stayed at home and continued their usual drug treatment with weekly land based exercises. The patients receiving spa therapy had considerable improvement over those on conventional treatment and the beneficial effects lasted up to 40 weeks after treatment.

Juvenile idiopathic arthritis (JIA) has a prevalence of between 8 and 150 cases per 100,000 population and is the most chronic rheumatic disease of childhood causing significant short term and long term disability. There are 7 sub groups of JIA affecting different ages of children and with different clinical patterns. In all forms of JIA, hydrotherapy is used extensively.

Epps (21) has shown hydrotherapy to be cost effective compared with physiotherapy land based techniques in children with JIA.
2. Chronic Pain Syndromes

Low back pain (LBP) is the most common musculoskeletal complaint and it is estimated that 80% of the population will experience LBP during their lifetime. It is a major cause of loss of work and has significant effects upon the economy. Most patients with acute LBP improve spontaneously within 4 weeks however chronic LBP is extremely common and usually is mechanical in nature.

Wessinger (22) has demonstrated economic benefits in using hydrotherapy to rehabilitate patients with LBP.

Mcllveen (23) randomised 109 adults with chronic LBP to group hydrotherapy or land based exercises and showed statistically significant improvement in those undergoing hydrotherapy with deterioration in those treated with standard physiotherapy.

Balogh (24) compared balneotherapy with mineral water versus tap water in low back pain and showed some minor benefit from spa water therapy in pain score, spinal movement and local tenderness.

Sjogren (25) also showed improvement in group hydrotherapy versus conventional land based treatment in chronic LBP patients and Guillemin (26) compared 50 patients with chronic LBP attending a spa resort in France with 52 similar patients...
receiving *. This trial was of particular interest as the long term effects were assessed after 9 months and showed continued reduction in pain, drug consumption and spinal mobility in the spa treated group.

Fibromyalgia (FMS) is extremely prevalent in the general population affecting between 3 and 5% of women and around 1% of men. It is a condition associated with widespread chronic pain, fatigue, sleep disturbance, changes in personality and mood and multiple other symptoms than cannot be easily explained. The condition is a significant cause of disability in the community and unfortunately there are no specific treatments, which have proven efficacy. A number of studies have been performed in FMS to assess the effects of hydrotherapy.
Brockow (27) compared standard hydrotherapy with infra red hyperthermia in 69 patients with FMS and suggested that hydrotherapy would be a worthwhile adjunct in the treatment of the condition.

Tomas-Carus (28) compared hydrotherapy with group land based exercise in 34 patients with FMS and showed long term improvements in pain, quality of life, muscle strength and power in those receiving hydrotherapy.

Eksioglu (29), Vitorino (30) and Mannerkorpi (41) but all show prolonged benefit from water based exercise in FMS.

Neck pain is a common musculoskeletal symptom and approximately 90% of episodes of neck pain are mechanical in origin. As with back pain, neck pain usually resolves within 2-3 months but in some cases can be chronic.

Forestier (42) (43) compared spa therapy in 44 patients with chronic neck pain against 42 patients treated with pulsed electromagnetic field therapy.

Significant improvement was seen in both groups in terms of pain score and range of movement. Prettsel (44) compared fresh water and radon baths in chronic neck pain but found no difference between the 2.
3. Neurological Disease

Hydrotherapy has been used in the rehabilitation of patients with numerous neurological diseases including brain injury (45), multiple sclerosis (Cendrowski) (47), spasticity (Kesiktas) (48) and spinal cord injury with tetraplegia (gass 49). In all studies, hydrotherapy has a proven role in rehabilitation, particularly when water temperature is between 37 and 39°C.
4. Cardiac Disease

Recently, a role for hydrotherapy has been found in the treatment of chronic cardiac disease including heart failure. Until recently, hydrotherapy was thought to be potentially dangerous for patients with long term heart disease however recent studies have suggested that as well as tolerating the emersion in warm water, heart function and general well being can improve. Cider (49) assessed the cardiorespiratory effects of warm water emersion in elderly patients with chronic heart failure and showed that hydrotherapy was well tolerated and of no danger to patients.

Michalsen (50), Cider (51), Michalsen (52 and 53) have all shown positive benefits in quality of life, heart failure related symptoms, heart rate responses and stress hormone levels in chronic heart failure patients treated with regular hydrotherapy regimens.
5. Respiratory Disease

As with chronic cardiac disease, it has been thought until recently that hydrotherapy should be avoided in patients with chronic lung disease however recent studies have shown considerable benefits.

Beamon (54) reviewed the literature and suggested an improvement in lung function in patients with chronic asthma when treated with hydrotherapy.

Mitsunobu (55) assessed patients with pulmonary emphysema over a 5 year period and showed long term benefits from spa therapy in terms of lung function and oxygen capacity.

Forgeys (56) even suggested that hydrotherapy can be used to assist smoking cessation!

Waddell (57) showed an improvement in lung function in patients with chronic obstructive pulmonary disease with high intensity group hydrotherapy. In this study, 30 patients were randomised to either land based exercise or group hydrotherapy all patients having moderate to severe chronic obstructive pulmonary disease. Those patients receiving hydrotherapy had improvements in quality of life, activity scores and well being compared with land based exercise and with a controlled group who received no specific treatment.
6. Miscellaenous

There are a small number of studies in other fields of medicine where hydrotherapy has been assessed and shown to be of value.

In obstetric management, hydrotherapy has been used in labour (Benfield 58), Prevedel (59) Rush (60). In the latter trial, Rush demonstrated the benefits of whirlpool baths in labour in a randomised controlled trial whereby 393 women used whirlpool bath during labour and results were compared with a controlled group of 392 women receiving conventional care. No births occurred in the whirlpool tub however those patients receiving whirlpool therapy required less pain killers, experienced fewer deliveries by forceps and had fewer tears than the conventionally treated group. Cesarean section rate was lower and personal satisfaction ratings higher in the whirlpool treated patients.

The effects of hydrotherapy upon the immune system have been valuated in some studies.

Emst (61) gave a regular hydrotherapy regimen to 25 volunteers over a 6 month period and compared them with 25 volunteers with no hydrotherapy and found a significant reduction in frequency of head colds in those receiving hydrotherapy. Furthermore, those subjects contracting a cold were less severely affected and the duration of the infection was shorter suggesting that regular hydrotherapy represents an effective prophylaxis against common colds. This preservation was not made in a further study of community hydrotherapy in school aged children (Gruber 62).
Chronic skin diseases such as psoriasis and dermatitis have been assessed but mainly in the comparison of standard tap water hydrotherapy versus specific spa waters in mainland Europe. Some of these studies have shown improvement with specific spas suggesting that the minerals contained in the water have a direct effect upon the skin disease Tsourel-Nikita (62), Gambichler (63), Zumiami (64) and Delfeno (65).

In the field of sports medicine, hydrotherapy is again a mainstay of treatment for rehabilitation after injury. Numerous studies published with majority revealing benefits from hydrotherapy compared with standardised physiotherapy regimens including Toomey (63), Tovin (64), Cote (65), Mucha (66), Vaile (67) and Vitasalo (68). Particular benefit has been shown in rehabilitation after knee injury including cruciate ligament damage.
**Summary**

This article demonstrates that hydrotherapy has a wide role in the management of a wide range of medical conditions. Whilst the data is, in some research, of limited interpretive value, there is a developing body of evidence supporting the use of hydrotherapy in conditions as varied as chronic arthritis, chronic pain syndromes, neurological disease, heart failure and chronic lung conditions.

As our understanding of human physiology has improved, we can see that hydrotherapy has many varied benefits in these conditions with particular emphasis upon quality of life, well being and physical conditioning.
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Appendix A

B+W Hydrotherapy Equipment

Data Sheets
Review of Hydrotherapy & Balneotherapy

Vitality Pool Attractions Data Sheet

Air Tub

<table>
<thead>
<tr>
<th>Air Tub - Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>This feature is designed to provide the bather with a vigorous air massage whilst standing within the air enclosure. Air is injected into the base unit and is pumped up through the distribution plate to provide an invigorating massage which stimulates the lower part of the body. The unit is supplied complete with enclosure and central support pedestal, and is available in a variety of sizes to suit single or multiple bathers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
</tr>
<tr>
<td>1.2m Dia.</td>
</tr>
<tr>
<td>1.4m Dia.</td>
</tr>
<tr>
<td>1.6m Dia.</td>
</tr>
<tr>
<td>1.8m Dia.</td>
</tr>
<tr>
<td>2.0m Dia.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials of Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater pools: 316 sf' sf'</td>
</tr>
<tr>
<td>Salt water pools: super duplex st' sf'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finishes Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) mirror polish – 0.03 micron quality</td>
</tr>
<tr>
<td>b) satin polish – 0.06 micron quality</td>
</tr>
<tr>
<td>c) bead blast – T.B.A.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ancillary Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Air Blower is located in the plant room and is interconnected with the Tub using uPVC and galvanised pipework.</td>
</tr>
<tr>
<td>Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Photo Electric Sensor.</td>
</tr>
<tr>
<td>An air loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.</td>
</tr>
</tbody>
</table>
## Vitality Pool Attractions Data Sheet

### Body Massage Station

<table>
<thead>
<tr>
<th>Body Massage Station - Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>This feature is a freestanding uniquely designed enclosure, with multiple jets located around perimeter station provided. Provide hydro-massage to the lower and middle part of the body.</td>
<td><strong>Diameter</strong></td>
</tr>
<tr>
<td></td>
<td>m</td>
</tr>
<tr>
<td>0.6m</td>
<td>1.3m</td>
</tr>
<tr>
<td>1.2m</td>
<td>1.3m</td>
</tr>
<tr>
<td>1.6m</td>
<td>1.3m</td>
</tr>
<tr>
<td>2.0m</td>
<td>1.3m</td>
</tr>
</tbody>
</table>

### Materials of Construction

- Freshwater pools: 316L stainless steel
- Salt water pools: super duplex stainless steel

### Finishes Available

- a) mirror polish – 0.03 micron quality
- b) satin polish – 0.06 micron quality
- c) bead blast – T.B.A.

### Ancillary Equipment

A Pump and Strainer are located in the plantroom and are interconnected with the station using uPVC pipework. Electrical power and wiring to the pump is from the Electrical Control Panel and is activated by a photo electric sensor.
# Vitality Pool Attractions Data Sheet

## Air Recliner

### Air Recliner - Description
This feature is designed to provide a contoured relaxed sitting position. This feature is ergonomically designed to provide a contoured relaxation bed for hydro-massage and support of the entire body.

Note: Other sizes are available to suit bespoke requirements.

The recliner is designed with removable and hinged sections to allow access below for cleaning.

### Materials of Construction
- Freshwater pools: 316 st’ st’
- Salt water pools: super duplex st’ st’

### Finishes Available
- a) mirror polish – 0.03 micron quality
- b) satin polish – 0.05 micron quality
- c) bead blast – T.B.A.

### Dimensions
<table>
<thead>
<tr>
<th>Length</th>
<th>Height</th>
<th>Width</th>
<th>Blower</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8m</td>
<td>1.27m</td>
<td>1.2m</td>
<td>2.2</td>
</tr>
<tr>
<td>1.0m</td>
<td>1.27m</td>
<td>1.2m</td>
<td>3.0</td>
</tr>
<tr>
<td>1.2m</td>
<td>1.27m</td>
<td>1.2m</td>
<td>3.0</td>
</tr>
<tr>
<td>1.4m</td>
<td>1.27m</td>
<td>1.2m</td>
<td>4.0</td>
</tr>
<tr>
<td>1.6m</td>
<td>1.27m</td>
<td>1.2m</td>
<td>4.0</td>
</tr>
<tr>
<td>1.8m</td>
<td>1.27m</td>
<td>1.2m</td>
<td>4.0</td>
</tr>
<tr>
<td>2.0m</td>
<td>1.27m</td>
<td>1.2m</td>
<td>4.0</td>
</tr>
<tr>
<td>2.5m</td>
<td>1.27m</td>
<td>1.2m</td>
<td>5.5</td>
</tr>
<tr>
<td>3.0m</td>
<td>1.27m</td>
<td>1.2m</td>
<td>5.5</td>
</tr>
</tbody>
</table>

### Ancillary Equipment
An Air Blower is located in the plant room and is interconnected with the recliner using upVC and galvanised pipework.

Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Photo Electric Sensor.

An Air Loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.
Review of Hydrotherapy & Balneotherapy

Vitality Pool Attractions Data Sheet

Curved Hydroback Bench

<table>
<thead>
<tr>
<th>Curved Hydroback Bench - Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>This feature incorporates an air manifold and hydrojets, and is designed to provide hydro-massage to the thighs and lower back.</td>
<td>Length</td>
</tr>
<tr>
<td>Note: Other sizes and radii are available to suit bespoke requirements.</td>
<td>1.0m</td>
</tr>
<tr>
<td>The bench is designed with removable and hinged sections to allow access below for cleaning.</td>
<td>2.0m</td>
</tr>
<tr>
<td></td>
<td>3.0m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials of Construction</th>
<th>Ancillary Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater pools: 316 st' st'</td>
<td>An Air Blower and pump is located in the plant room and is interconnected with the bench using uPVC and galvanised pipework.</td>
</tr>
<tr>
<td>Salt water pools: super duplex st' st'</td>
<td>Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Photo Electric Sensor.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finishes Available</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) mirror polish – 0.03 micron quality</td>
<td>An Air Loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.</td>
</tr>
<tr>
<td>b) satin polish – 0.06 micron quality</td>
<td></td>
</tr>
<tr>
<td>c) bead blast — T.B.A.</td>
<td></td>
</tr>
</tbody>
</table>
## Vitality Pool Attractions Data Sheet

### Straight Hydroback Bench

**Straight Hydroback Bench - Description**

This feature incorporates an air manifold and hydrojets and is designed to provide hydro massage to the thighs and lower back.

Note: All other sizes are available to suit bespoke requirements.

**Dimensions**

<table>
<thead>
<tr>
<th>Length</th>
<th>Height</th>
<th>Width</th>
<th>Blower</th>
<th>Pump</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8m</td>
<td>1.25m</td>
<td>0.8m</td>
<td>2.2 kW</td>
<td>1.1 kW</td>
</tr>
<tr>
<td>1.0m</td>
<td>1.25m</td>
<td>0.8m</td>
<td>2.2 kW</td>
<td>1.1 kW</td>
</tr>
<tr>
<td>1.2m</td>
<td>1.25m</td>
<td>0.8m</td>
<td>3.0 kW</td>
<td>1.1 kW</td>
</tr>
<tr>
<td>1.4m</td>
<td>1.25m</td>
<td>0.8m</td>
<td>3.0 kW</td>
<td>1.1 kW</td>
</tr>
<tr>
<td>1.6m</td>
<td>1.25m</td>
<td>0.8m</td>
<td>3.0 kW</td>
<td>1.5 kW</td>
</tr>
<tr>
<td>1.8m</td>
<td>1.25m</td>
<td>0.8m</td>
<td>3.0 kW</td>
<td>1.5 kW</td>
</tr>
<tr>
<td>2.0m</td>
<td>1.25m</td>
<td>0.8m</td>
<td>4.0 kW</td>
<td>1.5 kW</td>
</tr>
<tr>
<td>2.5m</td>
<td>1.25m</td>
<td>0.8m</td>
<td>4.0 kW</td>
<td>1.5 kW</td>
</tr>
<tr>
<td>3.0m</td>
<td>1.25m</td>
<td>0.8m</td>
<td>4.0 kW</td>
<td>2.2 kW</td>
</tr>
</tbody>
</table>

**Materials of Construction**

Freshwater pools: 316 st’st’
Salt water pools: super duplex st’st’

**Finishes Available**

a) mirror polish – 0.03 micron quality
b) satin polish – 0.06 micron quality
c) bead blast – T.B.A.

**Ancillary Equipment**

An Air Blower and pump is located in the plantroom and is interconnected with the bench using uPVC and galvanised pipework.

Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Photo Electric Sensor.

An Air Loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.
### Vitality Pool Attractions Data Sheet

#### Neck Massage Spout Nozzle

This feature is designed to provide hydro-massage to the shoulder & neck area.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Nozzle Diameter</th>
<th>Height</th>
<th>Pipe Diameter</th>
<th>Pump Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25mm</td>
<td>1.0m</td>
<td>50mm</td>
<td>1.1 kW</td>
</tr>
<tr>
<td></td>
<td>25mm</td>
<td>1.2m</td>
<td>50mm</td>
<td>1.1 kW</td>
</tr>
<tr>
<td></td>
<td>25mm</td>
<td>1.4m</td>
<td>50mm</td>
<td>1.1 kW</td>
</tr>
</tbody>
</table>

#### Materials of Construction

- Freshwater pools: 316 stainless steel
- Salt water pools: super duplex stainless steel

#### Finishes Available

- a) mirror polish — 0.03 micron quality
- b) satin polish — 0.06 micron quality
- c) bead blast — T.B.A.

### Ancillary Equipment

A Pump and Strainer are located in the plantroom and are interconnected with the Spout using uPVC pipework. Electrical power and wiring to the pump is from the Electrical Control Panel and is activated by a photo electric sensor.
Vitality Pool Attractions Data Sheet

Neck Massage Fan Spray

<table>
<thead>
<tr>
<th>Neck Massage Fan Spray - Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>This feature is designed to provide hydro-massage to the shoulder &amp; neck area.</td>
<td>Nozzle Width</td>
</tr>
<tr>
<td>50mm</td>
<td>1.2m</td>
</tr>
<tr>
<td>75mm</td>
<td>1.0m</td>
</tr>
<tr>
<td>75mm</td>
<td>1.2m</td>
</tr>
<tr>
<td>75mm</td>
<td>1.4m</td>
</tr>
</tbody>
</table>

Materials of Construction
Freshwater pools: 316 st/st
Salt water pools: super duplex st/st

Ancillary Equipment
A Pump and Strainer are located in the plantroom and are interconnected with the Fan Spray using uPVC pipework. Electrical power and wiring to the pump is from the Electrical Control Panel and is activated by a photo electric sensor.

Finishes Available
a) mirror polish – 0.03 micron quality
b) satin polish – 0.05 micron quality
c) bead blast – T.B.A.
# Vitality Pool Attractions Data Sheet

## Neck Massage Rain Spray

![Image of Neck Massage Rain Spray]

<table>
<thead>
<tr>
<th>Neck Massage Rain Spray - Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>This feature is designed to provide hydro-massage to the shoulder &amp; neck area.</td>
<td>Nozzle Width</td>
</tr>
<tr>
<td></td>
<td>50mm</td>
</tr>
<tr>
<td></td>
<td>75mm</td>
</tr>
<tr>
<td></td>
<td>75mm</td>
</tr>
<tr>
<td></td>
<td>75mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials of Construction</th>
<th>Ancillary Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater pools: 316 st' st'</td>
<td>A Pump and Strainer are located in the plantroom and are interconnected with the Rain Spray using uPVC pipework. Electrical power and wiring to the pump is from the Electrical Control Panel and is activated by a photo electric sensor.</td>
</tr>
<tr>
<td>Salt water pools: super duplex st' st'</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finishes Available</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) mirror polish – 0.03 micron quality</td>
<td></td>
</tr>
<tr>
<td>b) satin polish – 0.06 micron quality</td>
<td></td>
</tr>
<tr>
<td>c) bead blast – T.B.A.</td>
<td></td>
</tr>
</tbody>
</table>
# Vitality Pool Attractions Data Sheet

## Mini Air Tub

![Mini Air Tub Image](image)

<table>
<thead>
<tr>
<th><strong>Mini Air Tub - Description</strong></th>
<th><strong>Dimensions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This feature will provide the bather with vigorous air massage whilst standing within the air enclosure. Air is injected into the base unit and is pumped up through the distribution plate to provide an invigorating massage which stimulates the lower part of the body. The unit is supplied complete with enclosure and is suitable for single bathers.</td>
<td>Diameter</td>
</tr>
<tr>
<td></td>
<td>0.8m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Materials of Construction</strong></th>
<th><strong>Ancillary Equipment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater pools: 316 st st’</td>
<td>An Air Blower is located in the plant room and is interconnected with the tub using uPVC and galvanised pipework.</td>
</tr>
<tr>
<td>Salt water pools: super duplex st st’</td>
<td>Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Photo Electric Sensor.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Finishes Available</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) mirror polish – 0.03 micron quality</td>
</tr>
<tr>
<td>b) satin polish – 0.06 micron quality</td>
</tr>
<tr>
<td>c) bead blast – T.B.A.</td>
</tr>
</tbody>
</table>

An Air Loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.
Vitality Pool Attractions Data Sheet

**Straight Air Lounger**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
<th>Blower</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.8m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>4.0 kW</td>
</tr>
<tr>
<td></td>
<td>1.0m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>4.0 kW</td>
</tr>
<tr>
<td></td>
<td>1.2m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>4.0 kW</td>
</tr>
<tr>
<td></td>
<td>1.4m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>4.0 kW</td>
</tr>
<tr>
<td></td>
<td>1.6m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>5.5 kW</td>
</tr>
<tr>
<td></td>
<td>1.8m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>5.5 kW</td>
</tr>
<tr>
<td></td>
<td>2.0m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>5.5 kW</td>
</tr>
<tr>
<td></td>
<td>2.5m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>5.5 kW</td>
</tr>
<tr>
<td></td>
<td>3.0m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>7.5 kW</td>
</tr>
</tbody>
</table>

**Straight Air Lounger - Description**

This feature is ergonomically designed to provide a contoured relaxation bed for hydro-massage and support of the entire body.

Note: Other sizes are available to suit bespoke requirements.

The lounger is designed with removable and hinged sections to allow access below for cleaning.

**Materials of Construction**

Freshwater pools: 316 st' st'
Salt water pools: super duplex st' st'

**Finishes Available**

a) mirror polish — 0.03 micron quality
b) satin polish — 0.06 micron quality
c) bead blast — T.B.A.

**Ancillary Equipment**

An Air Blower is located in the plant room and is interconnected with the lounger using uPVC and galvanised pipework.

Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Phyto Electric Sensor.

An Air Loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.
Vitality Pool Attractions Data Sheet

Curved Air Lounger

Curved Air Lounger - Description
This feature is ergonomically designed to provide a contoured relaxation bed for hydro-massage and support of the entire body.

Note: Other sizes and radii are available to suit bespoke requirements. The lounger is designed with removable and hinged sections to allow access below for cleaning.

Materials of Construction
Freshwater pools: 316 stainless steel
Saltwater pools: super duplex stainless steel

Finishes Available
a) mirror polish – 0.03 micron quality
b) satin polish – 0.09 micron quality
c) bead blast – T.B.A.

Dimensions

<table>
<thead>
<tr>
<th>Length</th>
<th>Height</th>
<th>Width</th>
<th>Blower</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>4.0 kW</td>
</tr>
<tr>
<td>1.0m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>4.0 kW</td>
</tr>
<tr>
<td>1.2m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>4.0 kW</td>
</tr>
<tr>
<td>1.4m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>4.0 kW</td>
</tr>
<tr>
<td>1.6m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>5.5 kW</td>
</tr>
<tr>
<td>1.8m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>5.5 kW</td>
</tr>
<tr>
<td>2.0m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>5.5 kW</td>
</tr>
<tr>
<td>2.5m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>5.5 kW</td>
</tr>
<tr>
<td>3.0m</td>
<td>1.31m</td>
<td>1.89m</td>
<td>7.5 kW</td>
</tr>
</tbody>
</table>

Ancillary Equipment
An Air Blower is located in the plant room and is interconnected with the lounger using uPVC and galvanised pipework.

Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Photo Electric Sensor.

An Air Loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.
**Vitality Pool Attractions Data Sheet**

**Body Massage Jets**

<table>
<thead>
<tr>
<th><strong>Body Massage Jets - Description</strong></th>
<th><strong>Dimensions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This feature is designed to provide hydro-massage to the lower body from specially designed jets built into the pool wall. The jets are set at varying levels to provide hydro-massage to the calf, thigh and lower back area.</td>
<td>To suit clients requirements</td>
</tr>
<tr>
<td></td>
<td>Pump Size 2.2 kW</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Materials of Construction</strong></th>
<th><strong>Ancillary Equipment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater pools: 310 st' st'</td>
<td>A Pump and Strainer are located in the plant room and are interconnected with the station using uPVC pipework. Electrical power and wiring to the pump is from the Electrical Control Panel and is activated by a photo electric sensor.</td>
</tr>
<tr>
<td>Salt water pools: super duplex st' st'</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Finishes Available</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) mirror polish – 0.03 micron quality</td>
</tr>
<tr>
<td>b) satin polish – 0.06 micron quality</td>
</tr>
<tr>
<td>c) bead blast – T.B.A.</td>
</tr>
</tbody>
</table>
### Vitality Pool Attractions Data Sheet

#### Stepped Body Massage Jets

<table>
<thead>
<tr>
<th>Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>This feature is designed to provide hydro-massage to the lower body from specially designed jets built into the pool wall. The jets are set at varying levels to provide hydro-massage to the calf, thigh and lower back area.</td>
<td>To suit clients requirements</td>
</tr>
<tr>
<td></td>
<td>Pump size 2.2 kW</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials of Construction</th>
<th>Ancillary Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater pools: 316 st’ st’</td>
<td>A Pump and Strainer are located in the plant room and are interconnected with the attraction using uPVC pipework. Electrical power and wiring to the pump is from the Electrical Control Panel and is activated by a photoelectric sensor.</td>
</tr>
<tr>
<td>Salt water pools: super duplex st’ st’</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finishes Available</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) mirror polish – 0.03 micron quality</td>
<td></td>
</tr>
<tr>
<td>b) satin polish – 0.06 micron quality</td>
<td></td>
</tr>
<tr>
<td>c) bead blast – T.B.A.</td>
<td></td>
</tr>
</tbody>
</table>
### Vitality Pool Attractions Data Sheet

#### Straight Air Bench

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
<th>Blower</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8m</td>
<td>0.55m</td>
<td>0.48m</td>
<td></td>
<td>2.2 kW</td>
</tr>
<tr>
<td>1.0m</td>
<td>0.55m</td>
<td>0.48m</td>
<td></td>
<td>2.2 kW</td>
</tr>
<tr>
<td>1.2m</td>
<td>0.55m</td>
<td>0.48m</td>
<td></td>
<td>3.0 kW</td>
</tr>
<tr>
<td>1.4m</td>
<td>0.55m</td>
<td>0.48m</td>
<td></td>
<td>3.0 kW</td>
</tr>
<tr>
<td>1.6m</td>
<td>0.55m</td>
<td>0.48m</td>
<td></td>
<td>3.0 kW</td>
</tr>
<tr>
<td>1.8m</td>
<td>0.55m</td>
<td>0.48m</td>
<td></td>
<td>3.0 kW</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials of Construction</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater pools</td>
<td>316 st' at'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salt water pools</td>
<td>super duplex st' at'</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finish Available</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) mirror polish</td>
<td>0.03 micron quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) satin polish</td>
<td>0.06 micron quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) bead blast</td>
<td>T.B.A.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Straight Air Bench - Description

This feature incorporates an air manifold and is designed to provide hydro-massage to the lower body.

Note: Other sizes are available to suit bespoke requirements.

The bench is designed with removable and hinged sections to allow access below for cleaning.

#### Ancillary Equipment

An Air Blower is located in the plant room and is interconnected with the bench using uPVC and galvanised pipework.

Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Photo Electric Sensor.

An Air Loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.
## Curved Air Bench - Description

This feature incorporates an air manifold and is designed to provide hydro-massage to the lower body.

Note: Other sizes and radii are available to suit bespoke requirements.

The bench is designed with removable and hinged sections to allow access below for cleaning.

### Dimensions

<table>
<thead>
<tr>
<th>Length</th>
<th>Height</th>
<th>Width</th>
<th>Blower</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0m</td>
<td>0.55m</td>
<td>0.48m</td>
<td>2.2 kW</td>
</tr>
<tr>
<td>2.0m</td>
<td>0.55m</td>
<td>0.48m</td>
<td>4.0 kW</td>
</tr>
<tr>
<td>3.0m</td>
<td>0.55m</td>
<td>0.48m</td>
<td>4.0 kW</td>
</tr>
</tbody>
</table>

### Materials of Construction

- Freshwater pools: 316 st' st'
- Salt water pools: super duplex st' st'

### Ancillary Equipment

An Air Blower is located in the plant room and is interconnected with the bench using uPVC and galvanised pipework.

Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Photo Electric Sensor.

An Air Loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.

### Finishes Available

a) mirror polish — 0.03 micron quality
b) satin polish — 0.06 micron quality
c) bead blast — T.B.A.
# Vitality Pool Attractions Data Sheet

## Combined Mini Air Tub and Body Massage Station

<table>
<thead>
<tr>
<th>Mini Air Tub - Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>This feature will provide the bather with vigorous air massage and hydro-massage to the lower and middle part of the body whilst standing within the enclosure. Air is injected into the base unit and is pumped up through the distribution plate and water pumped through jets located in the enclosure walls to provide an invigorating massage which stimulates the lower part of the body. The unit is supplied complete with enclosure and is suitable for single bathers.</td>
<td>Diameter</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>0.8m</td>
<td>1.3m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials of Construction</th>
<th>Ancillary Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater pools: 316 st' st'</td>
<td>An Air Blower and pump is located in the plant room and is interconnected with the combined station using uPVC and galvanised pipework. Electrical power and wiring to the Blower is from the Electrical Control Panel and is activated by the Photo Electric Sensor. An Air Loop is incorporated in the pipework system as part of the operational design adjacent to the pool and can be camouflaged within the pool surround structure.</td>
</tr>
<tr>
<td>Salt water pools: super duplex st' st'</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finishes Available</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) mirror polish – 0.03 micron quality</td>
<td></td>
</tr>
<tr>
<td>b) satin polish – 0.06 micron quality</td>
<td></td>
</tr>
<tr>
<td>c) bead blast – T.B.A.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix B

B+W Vitality & Hydrotherapy Pools

Typical Images
Abama, Tenerife

Loch Lomond Golf Club
Review of Hydrotherapy & Balneotherapy

The Carrick Spa, Cameron House, Loch Lomond

Seafield, Wexford

Chewton Glen, London
Review of Hydrotherapy & Balneotherapy

Kenmare, Ireland

Mandarin Oriental, New York
Maryborough, Ireland

Espa at Gleneagles, Scotland

Shangri La, Quaryat Abu Dhabi