

A nighttime cityscape featuring several tall buildings with lit windows. In the foreground, a large, illuminated portrait of a man with glasses is displayed on a building facade, set against a glowing yellow background. The overall scene is dark, with the city lights providing a warm glow.

# Water

creating stunning public spaces

Crystal  
*where ideas flow™*





**Water is synonymous with life; it underpins our survival and provides the common elemental link we share with all life on earth.**

We celebrate its arrival as it nourishes our crops and swells waterways. We appreciate its awesome power as it shapes the landscape but lament its absence through periods of drought.

Throughout history, fountains have been an essential part of every human settlement; as a source of life-sustaining water, a place to gather and reflect and a place to experience beauty and culture.

From playful indoor pools to tranquil exterior fountains, soaring waterfalls and grand lakes of enormous proportions, architecture throughout the centuries has engaged with water in endlessly innovative ways.

Today, water features are a symbol of grandeur, providing stunning public places for people to gather and re-discover their connection with the natural elements.

Water's power to soothe and calm the senses can now be harnessed through innovative and sustainable technologies, with the ability to create an immersive experience that is completely customisable.







**BUILDING KEY GLOBAL PARTNERSHIPS**

## creativity

[kree-ey-tiv-i-tee]

*noun*

the ability to transcend traditional ideas, rules, patterns, and to create meaningful new ideas, forms, interpretations, etc.

*see also: originality, progressiveness, imagination*



As a creative business, we have been helping our clients to re-imagine water features as an essential part of our society's fabric for the last 10 years.

With an integrated design and engineering team, our limitless imagination and professional guidance is available to help you create a stunning, stress-free project.

Founded in 1967, Crystal is a globally recognised leader in the commercial water feature industry.

Our partnership with Crystal in Canada gives us access to some of the highest quality, most technologically advanced water feature equipment in the world, supported by an in-house Research and Development team dedicated to delivering extraordinary yet sustainable water effects, regardless of your projects' scale or complexity.

**Engaging across all levels, from design through to engineering and construction, we are here to guide you on the pathway to creating and delivering the water feature of your dreams.**





# design

[dih-zahyn]

**noun**

an outline, sketch, or plan of a work of art or an edifice, to be executed or constructed

*see also: intention, purpose, adaptability*





# Design

Whether you're designing an interactive water plaza, a calming indoor oasis or stunning outdoor fountain, there are a few key design considerations that are universal in delivering a stunning end result.



## VISUAL IMPACT

Are you creating a focal point or sense of continuity? Calm and serene or dramatic and exciting?

## AESTHETIC CONTEXT

Consider the psychological, auditory and safety impact of the water feature within its surrounding environment

## LINE

How you are going to give direction and movement to the eye, express emotion, distance and establish perspective? Vertical lines can be perceived as more emphatic while horizontal lines can be perceived as calm and pleasant.

## MATERIALS

The structural and aesthetic use of glass, stainless steel and other metallics, stone and natural elements

## FORM

The form occupies a space and volume that is symmetrical or irregular. The more contrasting the shape is from its surroundings, the stronger the visual attraction.

## COLOUR

Incorporated into the design, colours can soothe and promote calmness or they can arouse and create a thrill or sense of drama.

## LIGHTING EFFECTS

White lighting can convey an elegant character while colour-changing can promote a dramatic and eye-catching show.

## MOTION

Static water is visually placid. Low flows deliver a serenity through gentle movements. Dynamic water captures the attention of the eye.

## SOUND

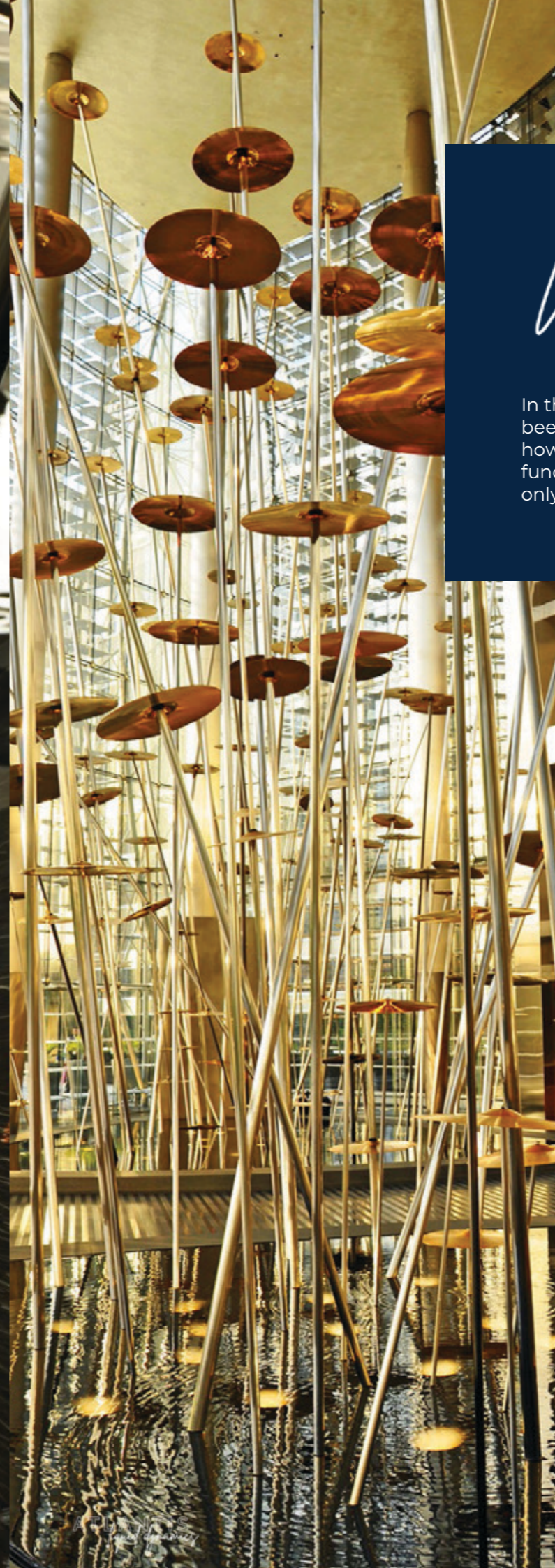
Water emits sound when it is in motion or strikes a surface. This can act to neutralise background or unwanted noise or create a sense of emotional tranquillity.

## CHOREOGRAPHY

Where your vision comes together; proving that the sum is so much more than just its parts. Choreography is the immersive experience you have orchestrated. The interrelationship between the moving water, lighting and materials is where the magic happens.







## Why water?

In the past, areas designated for fountains have been considered “dead space” or single purpose, however a carefully designed water feature should function as a stand-alone work of art where water only enhances the experience, not defines it.

When situated indoors, water features can act as a natural air filter, removing particles from the air. Large internal features can serve as a natural, cost effective dehumidifier for public spaces, gradually extracting moisture from the air. Acting as a source of thermal comfort, water features also naturally cool the surrounding area.

The flow of water and its interaction have been well documented to have healing effects on the mind and body. Water is a popular component of healing gardens and recovery centres for many hospitals, where patients and carers alike can use it to escape from the strain and toil of treatment.

An elemental force, the sound of water impact on a surface evokes feeling. It can be musical, it can be calming, it can create an immersive background symphony that adds yet another sensory dimension to the space.

No design medium has as profound an effect on people as water does. It attracts them, it entertains them, it soothes them. Water is one of the best design mediums to use to attract people, to draw them in to engage with a space and keep them captivated.





# Conservation

One of our most precious resources, water use can be reduced through a number of innovations.

## sustainability

[suh-stey-nuh-bil-i-tee]

**noun**

the quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term ecological balance

**see also:** support, uphold, sustain



The conflict between the desire to enthrall an audience and the urge to save water within a single design is a dilemma that designers are facing with increasing frequency.

Using a sustainable design philosophy, fountains and the surrounding development are treated as a single interconnected system and integrated design project, ensuring a holistic view of all site systems and how they can contribute to sustainable outcomes. Designing for sustainability is finding the equilibrium between captivation and conservation.



## PLANNING AND DESIGN

Most fountains are designed as enclosed systems, reusing the majority of their water. Water loss can be caused by evaporation and operating consumption due to splash and wind. Through the use of Crystals' 'WATERlab' simulations, we can analyse these potential water losses and re-design the products and orientation to further reduce if necessary.

The size and depth of the water feature footprint or fountain pool can be designed to use less water overall, while the use of zero-depth decks and under-ground water storage can further reduce evaporative water loss.

There are opportunities to use alternate water source options such as rain water, grey water, condensate from air-conditioning systems and salt water. By incorporating the water feature into greater water management systems, it can act as a water polishing system and storage location within the site development; cleaning up alternate source water for use in other site systems such as irrigation or used to collect, clean and redistribute excess site water.

## PRODUCTS

Crystals' range of smart control systems can be installed to monitor consumption, allowing you to react to current conditions and alter sequencing and water effects to reduce water consumption if necessary. Low flow, high impact water effects can be achieved with the right mix of products, delivering stunning effects without excess water consumption.







# Consumption

Feature energy use can become a sizeable ongoing asset cost if not correctly monitored and adjusted.

Crystals' smart control units also monitor energy use during peak periods, allowing you to optimise fountain performance times by taking into account other environmental factors such as wind and temperature.

Smart controls can be used to monitor site performance and energy levels, adjusting the fountains performance accordingly to take advantage of the most opportune conditions while conserving the maximum amount of energy.

Wind sensors monitor wind conditions on site and adjust the fountain performance to limit splash and needless energy use. For example, in high winds, the wind sensor will instruct the smart control to ramp down the

jet effects, preventing sub-par performance and reducing energy consumption.

Timer systems can also be used to ensure that a fountain is operating at the times it is most likely to be appreciated, performing during peak traffic periods and switching into a passive mode during lulls in activity.

Proximity controls such as sensors or activator buttons can be used to put the systems into a low-energy or sleep mode when there is no-one around to enjoy them. Super-fast start up means the water feature is always primed and ready to go at a moments notice. LED lighting and other energy efficient technologies can reduce overall energy usage and operating costs.

## CASE STUDY: CANADA'S WONDERLAND

Canada's largest theme park, Canada's Wonderland was opened in 1981, spanning 330 acres and catering to more than over 3.5 million visitors annually.

As a part of the parks' 30th birthday celebrations, the "Royal Fountain", a 91m long water feature was completely renovated.

The fountain's old technology incandescent light bulbs were replaced with Crystal's state-of-the-art RGBW LED lights.

504 lights were replaced during the renovation, delivering US\$32,000 in energy savings and saving US\$25,000 in replacement costs for burnt out bulbs annually.

**US\$57,000 TOTAL COST SAVINGS DELIVERED**

Material selection is important to address a water feature's overall green footprint. We use and recommend non-polluting materials such as low VOC waterproofing. Where possible, we use recyclable materials such as stainless steel, copper, brass and glass to create the structural and sculptural elements of a water feature. The use of local or salvaged materials such as granite or rock from site can also help to re-integrate the water feature back into the overall fabric of the space.

Durability of materials should also be considered as they will increase a projects' lifespan and lower ongoing maintenance and replacement costs.





# lighting

[lahy-ting]

**noun**

the act of illumination, the arrangement of lights to achieve particular effects

*see also: light, flame, brilliance*





# Lighting

With the ability to completely change the look and feel of your feature, there are a number of key lighting design considerations

## COLOUR SOURCES

Pure and non-aerated water relies on its environment for colour. The material finishes within a water feature will impact its colour as will the context (material, colours, ambient light) interacting with the water feature lighting.

## COLOUR TEMPERATURE

Defined by the warmth or coolness of the light source. Some white light technologies are inherently warmer while LED's are available in a variety of colour temperatures.

## WHITE VS. COLOUR

White lighting is particularly effective at evoking an elegant character. Multi-coloured fountains are popularised with the advent of LED lighting and create a more dynamic effect.

## COLOUR TYPES

Different colours require more lighting intensity to achieve the desired effects. Amber and turquoise require 50% more intensity than clear lights. Red requires 100% more intensity while blue and green require 250% more intensity than clear lights.

## AMBIENT LIGHT

Consider any continuous background illumination (natural or artificial) that cannot be controlled. A higher ambient light situation may require a more intense lighting solution.

## MOUNTING DEPTH

The challenge with submerged lighting is that it is dispersed through the water. More lumens are required to achieve the same effect as a dry architectural solution.



# Materiality

Materials and textures help enrich the visual quality of a water feature. Texture is a layered experience, augmented by the material surface and ambient lighting.

Consider the following textural dichotomies; coarse or smooth? Light or heavy? Fine or dense?

A variety of materials can be used in water feature design although glass, stainless steel and stone are most common.

## GLASS

Glass is a unique and versatile material - it's transparent, translucent and reflective. With the ability to be blown or moulded into the desired shape, water is expressed differently depending on the type of glass and lighting that is used.

## STAINLESS STEEL

Stainless steel is often the metal of choice in water feature design due to its corrosion and oxidation resistance, strength and reflective properties. It can be used as a practical element to hide mechanical components or it can be used as a decorative element such as with sculpture and ornate pipework.

## STONE

Natural stone has long been used in water features because of its many textures, colours, and forms. More organic designs may make use of stone's less refined forms, focussing on the uniqueness of the colour and finish and its ability to develop its own patina over time. Contemporary designs can also incorporate stone, with a more refined stone finish to give higher reflectivity or stronger geometric lines.

## TEXTURE

Smooth or coarse textures don't just add to the overall fabric of the design; coarse surfaces can add a safety element in a water environment, providing non-slip footing in pedestrian or play areas. Smooth textures can add another layer of reflection and depth to the space, particularly with black surfaces.





# Conduit

For centuries artists have used water in their work to express themselves; today, contemporary artists can use water as an expressive tool, taking advantage of the latest technology to enhance their work.

Our design team has been collaborating with artists since its inception, with the goal to become the conduit between art and engineering and enabling stunning immersive artworks to come to fruition.



# Tools

Crystal's WATERlab is a state-of-the-art 3D simulation software that uses real, physics-based particle collision to simulate real water. It is the first of its kind in the industry.



If a picture is worth *1,000 words*

then a prototype is worth *1,000 meetings*

WATERlab delivers a true simulation rather than an animation. While animation can show you how something may look, a simulation allows the designer to prototype how an idea looks, feels and performs under real world conditions. With this tool in your arsenal, we can further reduce the impacts of splash and wind upon a fountain by optimising its performance in the design stage, prior to construction.

## WHAT IS IN A SIMULATION?

- Water physics simulates and models real water behaviour
- Splash zone predicts water collection and pooling
- Collision accurately depicts impacts with physical environment

- Lighting capabilities include modelling illumination and sequencing
- Premium quality visualisations rendered in real-time with fast turnaround
- Fly-throughs and aerials provide a feeling of being in the space

Calibrating a feature's performance beforehand mitigates water loss and saves time and money on future adjustments

WATERlab allows designers to create without fear, giving you an accurate simulation of what your water feature will look like and how it will perform. This reduces risk while amplifying creative potential.







# Interactive

The next iteration in interactive water features for public spaces, water plazas can become a stunning round-the-clock activated entertainment feature.

During the day they act as magnets for children and adults who enjoy playing or watching the activity. After dark, interactive water features transform into focal points where people can congregate and observe vibrant, theatrical shows of programmed water and light.

During inactive periods, such as late at night or during a public event, interactive water features can also be automatically turned off to save energy or repurpose the space, making them a flexible addition to any public area.

Sequenced shows can be created with a combination of Crystal's LED technology and sequenced nozzle effects that work in harmony to build up climactic, choreographed shows.

## HOW INTERACTIVE WATER FEATURES WORK

Interactive water features vary from basic splash parks designed for children's play to more sophisticated water plaza having multiple uses.

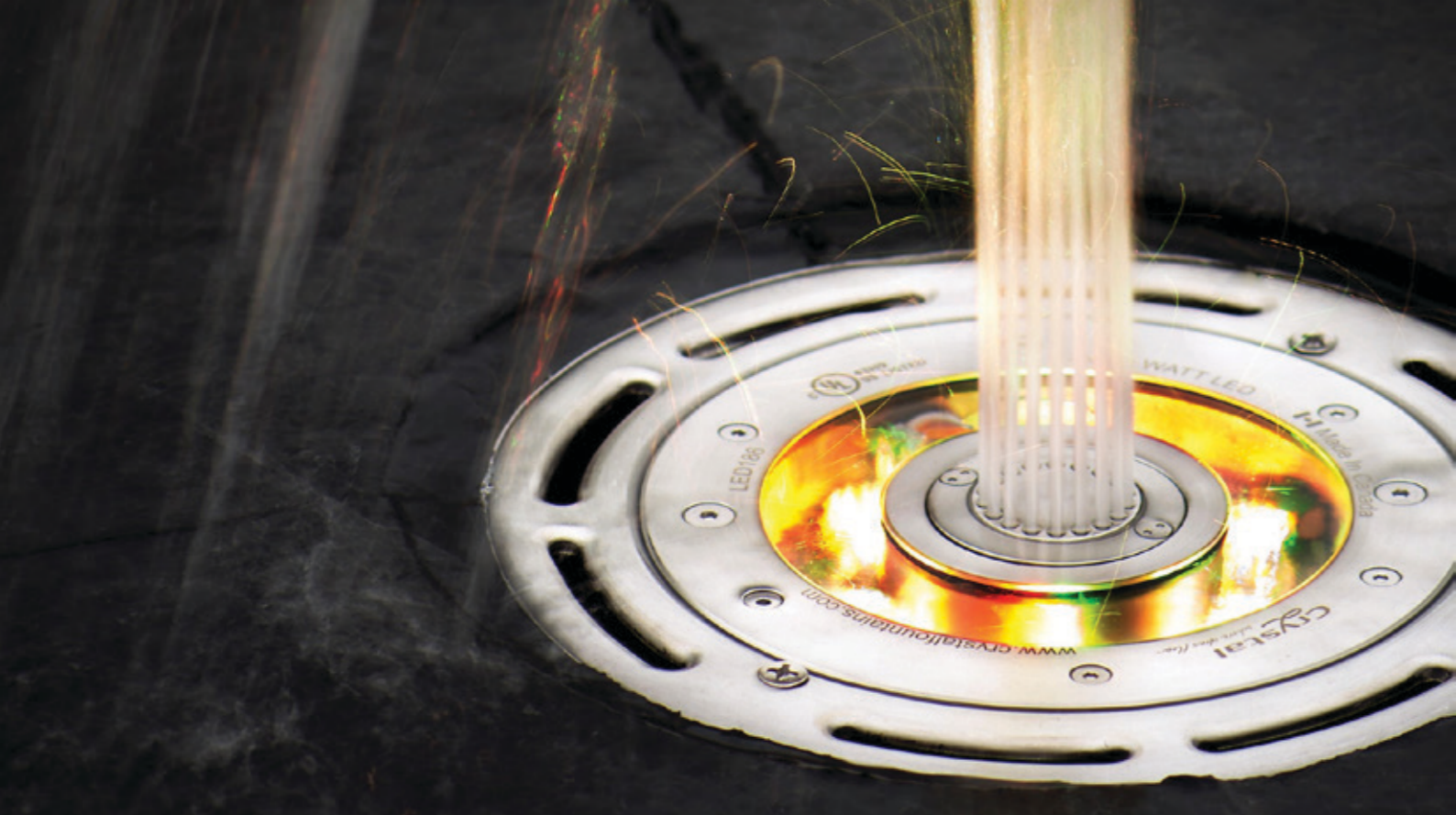
- Nozzles are placed in a flooded deck surround - poured drydeck or suspended deck
- The contained water from the surface is minimal (6mm) and water drains through the deck surround into a holding tank
- From there the water is pumped to the nozzles via a pumping or water treatment station

Controllers and sequencing devices enhance the experience in an interactive environment

Elements may be turned on or off for a fixed time and can be controlled by the sequencing programmer.







## QUALITY PARTNERSHIP

Offering some of the most technologically advanced aquatic feature products in the world, Crystal uses the best quality materials currently available. All Crystal products deliver safe water velocities and operating heights, with a huge range of features, nozzles, sprays and lighting effects to help you create your dream water or lighting feature.

Atlantis Liquid Dynamic's design team is here to help guide you through material considerations, ensuring there are no entrapment issues, all overland flow and infrastructure considerations have been taken into account, and to ensure complete integration into your site's systems.

### WANT TO LEARN MORE? MEET SHANE VARDY



With over 16 years' experience within the fabrication, construction and commercial design sectors, Shane's skill-set is the perfect mix to manage technical custom projects.

Engaging with clients through design collaborations and product selection, Shane has successfully delivered multi-million dollar aquatic projects across Australia.

Providing CPD sessions and technical tours of completed projects, Shane has the ability to guide clients through a very technical world.

AQUATIC SPECIFICATION PARTNER

# DESIGN *Pathway*

1

### INSPIRATION

The space where we realise anything is possible; be inspired by past projects, the context of your design and the feature requirements. Start the integrated design approach from the outset; Think about the overall context of your design and how you want people to experience the water feature.

2

### SUSTAINABILITY

Using a sustainable design philosophy, we look at the integration of the water feature into the whole site and its infrastructure, exploring options for reducing water and energy consumption without reducing the aesthetic impact.

3

### BESPOKE DESIGN

Completely customised for your project, we work with you to select from a range of standard or customised product to deliver your desired water effects. Your water feature concept will be brought to life with pictures, videos and Crystal's WATERlab, a water simulator that demonstrates how your water feature will perform in real-life conditions.

4

### FINISHES

From stainless steel to local granite to bespoke sculptural elements, material selection and finishes can help define the overall aesthetic by adding visual and tactile elements that give the water feature further presence and texture.

5

### SPECIFICATION

The bespoke design concept is reviewed for technical compliance and conformance to sustainability and safety standards. Products are detailed, ready for specification.

6

### CONSTRUCTION

Prior to construction, hydraulic and electrical engineering plans are completed, detailing integrations with new and existing services.

## WORK WITH US

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We have been helping our clients to re-imagine water features as an integral part of our society's fabric for the last 15 years.

With an integrated design and engineering team, our limitless imagination is bolstered by a professional construction team, experienced in flawless project completion.

Engaging across all levels, from design through to engineering and construction, we are here to guide you on the pathway to creating and delivering the water feature of your dreams.

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