

# The Kelpies

Horses made of sturdy stuff



In an around about way, it all started with two Clydesdale horses; Duke and Baron, some inspiration and a lot of love for the tradition of Scotland's historic working horses. From this came perhaps one of the most recognizable pieces of structural art the UK has seen since Gateshead's Angel of the North; Andy Scott's Kelpies.

Forming the centrepiece of The Helix in Falkirk, Scotland, The Kelpies sit within a specially constructed marina, guarding the new Eastern entrance to the Forth and Clyde canal. The Kelpies form the landmark for The Helix; a modern new parkland that has regenerated 350ha (3.5km<sup>2</sup>) of land, with over 19 miles (27km) of new pathways, modern landscaping and spectacular recreational spaces.

After all initial tenders had been deemed too expensive, a value engineered scheme from SH Structures, the specialists in design, supply and manufacture of complex steel structures, secured the position of Principal Contractor on the project on a Design and Build basis.

**"Being awarded The Kelpies project is a fantastic result for SH Structures and having the job of turning Andy Scott's design into potentially the largest equine sculptures in the world is something we are very proud of"** said Tim Burton, Sales and Marketing Manager of SH Structures.

Whilst local sculptor Andy Scott is more usually accustomed to sculpting his creations by hand, these two 30 meter (100ft) steel structures required a somewhat different approach. Due to their sheer size, weight and resulting complexity, the build was treated more like that of a bridge than a work of art. However the project started with Andy creating some tenth scale models or maquettes of his proposal which were subsequently digitally scanned to create a virtual surface model from which the engineers could develop the structural design of the full sized piece. Concept Consultant Engineers Atkins took on this challenge of scaling up the design, developing a structural support system capable of supporting the hundreds of individual stainless steel plates forming the external surface of each structure. The uniquely cut plates which formed this external 'skin' of the two heads were using brackets and a specialist fixing known as a Huck Bolt which provided a secure and tamper-proof fixing.

SH Structure's scheme design was based upon a complex but efficient tubular steel frame to create the internal structure of 'head up' and 'head down' Kelpies. All the tubes were sourced in the UK from Tata Steel,

## The Kelpies in numbers

<b>300,000kg</b> (300 tonnes) each	<b>30 metres</b> (100ft) high	<b>1,200 tonnes</b> of steel-reinforced concrete foundations per head	<b>990 unique</b> laser-cut external plates	<b>90 days</b> on site construction	<b>10,000L</b> (2,200gal) of our products
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many of which had to be bent into various radii to create the curved form of each head. The fabrication process took place in SH Structure's facility in North Yorkshire where the two heads were gradually built up into large sub-assemblies before being transported by road for the application of the protective treatment system at specialist applicators Jack Tighe Ltd.

Tim Burton says **"We have had a long standing working relationship with AkzoNobel and using their International® range, so they were an obvious choice to assist in the selection of a suitable system for this prestigious project."**

**"After understanding what the project entailed, we understood a coating was required that had good abrasion resistance and excellent aesthetic qualities; Interfine® 979 fit the bill perfectly"** said Ian Baldry, UK Business Development for AkzoNobel's Protective Coatings Business. The pieces of steel, coated with the International® polysiloxane Interfine 979 finish coat, were transported to The Helix Project in no fewer than 100 individual deliveries.

As a result of the extremely detailed 3D modelling process, accurate shop fabrication and trial assembly, the pieces of the 'Kelpies jigsaw' went together quickly and accurately. Onsite assembly of both Kelpie structures took only 90 days to complete with November 27th 2013 being marked as the final completion date. April 21st 2014 saw the official opening of The Kelpies at The Helix Project to the public and drew in thousands of visitors to witness a spectacular show that did justice to this fantastic work of structural art.

There has been incredible interest in the project from around the world with Andy Scott's original Kelpies maquettes being displayed at exhibitions in Chicago and New York and The Kelpies featured in many international publications. Now open to the public, part of the visitor experience is a guided tour which tells the story behind the project and takes visitors inside one of the heads where they can see clearly, the stunning complex steelwork protected with AkzoNobel's protective coatings.

