

# Barangaroo

Case Study

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build in style



# Big, bold & beautiful



One of Sydney's oldest industrial sites is being returned to nature and to the people.

**Project:** Barangaroo Headland Park

**Location:** Barangaroo NSW

**Site owner:** NSW Government

**Site manager:** Barangaroo Delivery Authority

**Head contractor:** Lend Lease

**Landscape design:** Johnson Pilton Walker in association with Peter Walker and Partners

**Landscaping contractor:** Regal Innovations

**Engineering:** Aurecon (Civil & Earthworks)

**Featured product:** Austral Masonry  
Magnumstone retaining wall system

**Photography:** Jacqui Dean

**It's said to be Sydney's last CBD waterfront development. A derelict 22 hectare site in the former dockside suburb of Barangaroo is being transformed into a \$6 billion blend of residential, commercial and recreational precincts.**

Barangaroo Headland Park, a six hectare headland fronting Sydney Cove, will be open for public and community use, with unique tidal rock pools, lookouts, and walking and cycling tracks.

Extensive retaining walls are being constructed at Barangaroo using Austral Masonry's unique Magnumstone system, to help bring form and order to the landscape while maintaining an environment of 75,000 plants native to Sydney.

(Austral Masonry's sister company Austral Precast is also supplying product into the Barangaroo project. Their precast panels are being used in the construction of the first two residential towers.)

The Magnumstone retaining wall system is appropriately named, as the standard unit weighs in at a mighty 621 kilograms! It's the basic component of what engineers call a passive retaining wall. This means the wall is engineered to use its mass to resist the lateral forces of the soil it retains.

Sydney-based commercial landscaping contractor, Regal Innovations, is carrying out the installation of almost two kilometres of Magnumstone retaining walls at Barangaroo Headland Park.

The retaining walls curve gently across the landscape, some carrying elevated walkways and others providing a bed for the wide range of flora being planted.

The process of constructing such a large retaining wall is simple and surprisingly speedy. The project has been broken down into six runs of walling, each about 300 metres long. A blinding slab – a level pad of unreinforced concrete – is formed to support the retaining wall.

The base blocks are then lifted and lowered into position using an excavator. The higher courses require a slightly different block, one with a double lug in its base that keys into the unit below. Austral Masonry calls this the SecureLug system which allow interlocking between units without mortar.

Each level is tied back to the retained soil using a geogrid soil-reinforcement material. Drainage also needs to be installed in the cores of the blocks.





At each stage the Magnumstone blocks, which are hollow, can be filled with aggregate to increase their weight and thus their retaining capacity. When the wall reaches its design height, it can be finished with top units (full or half height).

The Barangaroo Magnumstone retaining walls are two units high and comprise a base unit and a standard-height top unit. Each course is offset from the underlying course by half, identical to a stretcher bond in brickwork.

The rear of the wall is drained by slotted pipe in a layer of free-draining aggregate wrapped in a geotextile material. All blocks are also filled with aggregate. A layer of geogrid material is inserted between courses. Finally, the area behind the walling is back filled with selected subsoil material and capped with top soil.

Constructing a Magnumstone retaining wall is a straightforward process, according to Daniel De Chellis, Regal Innovations foreman who led the onsite construction team. Although the blocks are heavy, his team members found them easy to lift and manoeuvre using an excavator boom. Two chains are attached to lifting points cast into the units which are then elevated about half a metre off the ground and transported into position.

The Magnumstone system offers a range of advantages over competitive methods. Each unit is manufactured using nearly half the amount of concrete required in a traditional solid concrete retaining wall blocks.

Magnumstone blocks have low absorption and excellent freeze/thaw characteristics, ensuring enhanced durability in challenging environments.

As shown in the Barangaroo project, standard units can be laid in gentle curves. Special units are available for tighter curves.

But the greatest advantages are on site. Blocks can be unloaded two at a time. There is no mortar to mix, no formwork, no stream of concrete trucks coming onto the site.

And it's quick. Daniel De Chellis reports they are laying up to 130 blocks per day. That's up to 80 metres of 1.2 metre high walling per day. Not bad for just two men and an excavator.

Barangaroo Headland Park is scheduled for completion in 2015. While the flora settles into the new landscape, the overall site will evolve over the following decade into what promises to be a dynamic and attractive harbourside precinct.



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