Aqua Park Cardiff Method Statement

1. Introduction

Aqua Park Cardiff will be an 8,000 m^2 inflatable water park in Cardiff Bay within an area that is approximately 76 m long and 55 m wide. A figure indicating the location of Aqua Park Cardiff in relation to Cardiff Bay has been provided as a supporting document to the Marine Licence application (Supporting Figure 1). The water park will comprise of 72 inflatables that will be tethered to the seabed with concrete anchors. The water park will be accessed via a temporary pontoon that will also be tethered with anchors. Onshore facilities will include marquees and mobile offices. Throughout installation, the site will be cordoned off from the public (Figure 1).

The water park will operate from 7th May until 20th September 2019 and will then be dismantled and removed from site. Construction and installation of the water park and onshore facilities will take a total of seven days. The dismantling and removing of all infrastructure will also take approximately seven days.

This Method Statement sets out further details on the anchors, pontoon and inflatables for the water park, their method of installation and details of management measures that will be used to prevent or minimise effects on the environment.

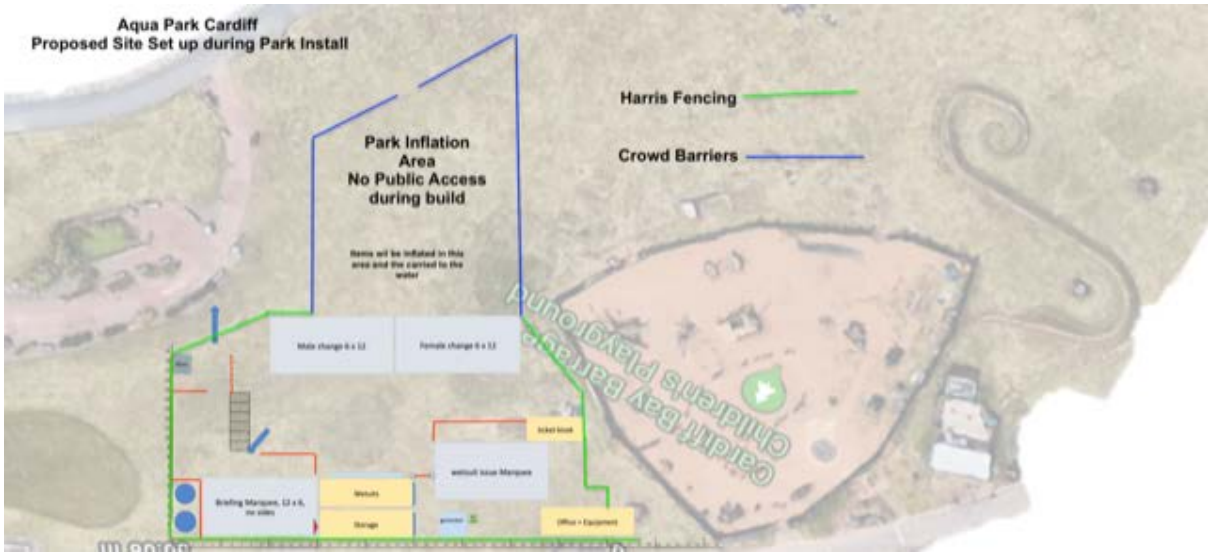

Figure 1: Proposed Onshore Site Set Up during Water Park Installation.

2. Anchors

2.1. Size and number of anchors

To tether the inflatables and pontoon, a total of 120 anchors will be required. There will be two sizes of C30 concrete blocks used as anchors for the inflatables as well as concrete deadweights for the pontoon (Table 1). For reference, a photograph of similar anchors from a different site is provided in Figure 2. The anchor plan for the inflatables has been provided as a supporting document to the Marine Licence (Supporting Figure 3) and is also shown in Figure 9.

The pontoon will be tethered to the deadweights using heavy duty and light duty chains and the anchor plan for the pontoon is shown in Figure 3 below.

Table 1: Anchor sizes to be used for Aqua Park Cardiff.

Anchor weight	Anchor size (cm)	Approximate Number Required
Inflatables		
250 kg block	80 x 75 x 20	56
500 kg block	120 x 100 x 20	58
Pontoon		
375-450 kg deadweights		6

Figure 2: Example of similar concrete blocks (those illustrated were for a different project).

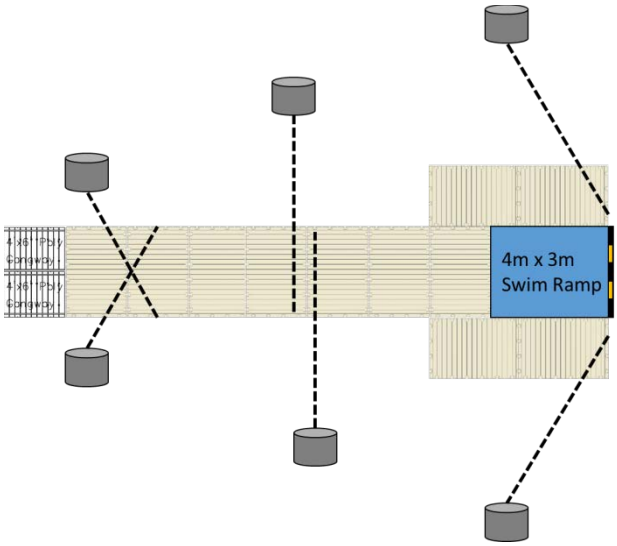

Figure 3: Anchor plan for the pontoon showing deadweights and chains.

2.2. Anchor Construction

The concrete blocks that will be used as anchors will be cast on site. This will involve:

- Building wooden shuttering;
- Placing shuttering in position;
- Lining shuttering;
- Placing reinforcing mesh and anchor hooks;
- Pouring the concrete; and
- Removal of anchors from the shuttering.

The wooden shuttering will be placed on top of a protective Damp Proof Membrane (DPM) barrier on firm level ground with good access for the cement mixer to pull along side and offload pre-mixed concrete. Care will be taken to ensure the route is clear of potential hazards for the cement truck to access the site. The shuttering will be lined with another layer of DPM and fixed in position. Anchor hooks (12 mm high tensile steel) will be placed into each mould through a layer of reinforcing mesh. Pre-mixed concrete will be delivered to site via a cement mixer at the required specification. A banksman will be appointed to guide the driver to the first mould for pouring. As each mould is filled the flow of concrete will be directed into the adjacent mould and the filled anchor tamped down by hand and left to cure. After 1-2 weeks curing time the anchors will be ready to be placed into the water. The anchors are placed onto the seabed at a depth of about 4 m and they will be moved to site by safety boat and working platform. A photograph of the working platform is provided in Figure 4.

Figure 4: Working platform to be used to place and retrieve anchors.

2.3. Management measures/mitigation

Concrete will be poured into wooden containers (shuttering) lined with a protective layer of DPM to prevent spillages or leaks.

Staff will wear appropriate PPE. The staff that will be used to cast the concrete blocks have the following training:

- First Aid at Work;
- Ski Boat Drivers Award (SBDA, equivalent to RYA Powerboat level 2); and

- Safeguarding and Protecting Children.

3. Pontoon

3.1. Size of pontoon

The pontoon will be approximately 19.8 m long with a 3 m wide walkway leading to a C-shaped section of the pontoon which will be 7 m wide (Figure 5). The first 1.8 m will be a raised gangway (Figure 6a) to avoid the existing gabion baskets along the waterfront. A 4 m x 3 m swim ramp will be fixed to the inside of the C-section of the pontoon (Figure 6b).

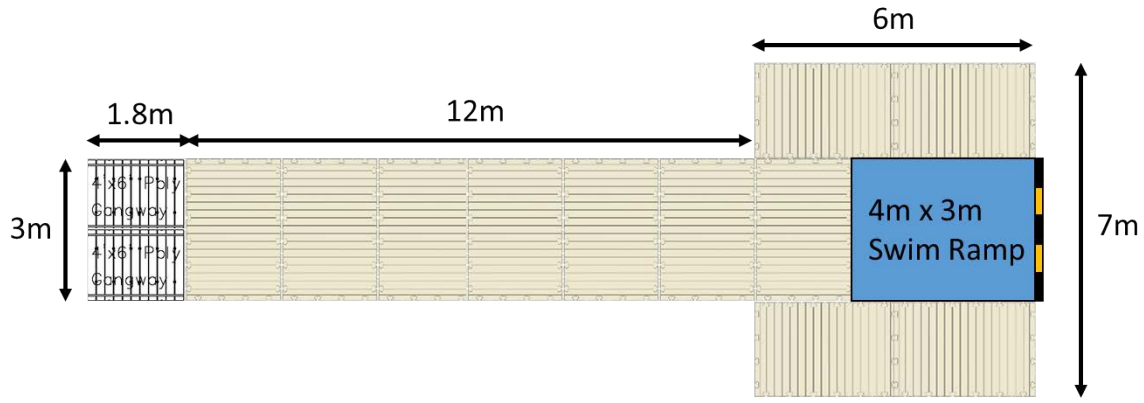

Figure 5: Pontoon layout.

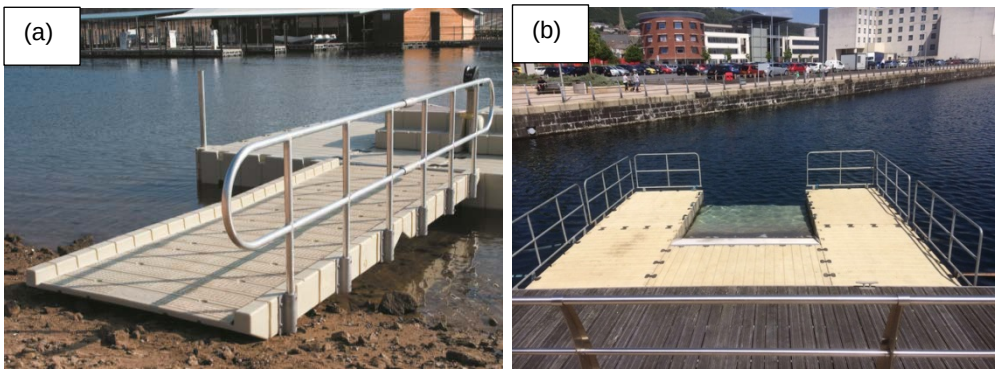

Figure 6: Example of (a) pontoon gangway; (b) C-section pontoon with swim ramp.

3.2. Transport to site

The pontoon sections will be brought to site on an articulated lorry fitted with a Hydrauliska Industri AB (HIAB) crane. The working area will be cordoned off for the duration of the works. A telehandler will be used to move all pontoon sections from the unloading area to the water.

A safety boat with a 6 HP outboard engine will be lifted from the lorry bed using the telehandler and positioned onto the water. The boat will be moored to the embankment using mooring lines to road pins.

3.3. Installation of the pontoon

The Aluminium Swim Ramp will be lifted from the bed of the lorry using the telehandler and positioned in between the 'C Section' pontoon. Supporting brackets will be attached to the pontoon which the swim ramp will be positioned onto. The 'C Section' pontoon will then be attached to the head of the walkway. Once in position, the ramp will be lowered into the water manually and bolted using 24 mm stainless steel nuts. Pocket fillers will be attached around the head of the pontoon. All safety handrails will be fixed to the perimeter of the pontoon. These will be attached using 24 mm stainless steel bolts and life rings will be attached to the handrail. The first section of the walkway will be raised by 40 cm using an additional section of pontoon and both sections will be bolted together using double stacked plates with 24 mm stainless steel Bolts.

Two gangways will be attached to the double section using hinge connections. This will provide safe transition over the existing gabion baskets (Figure 7). Underneath, there will be two eyelets attached, so when lifted into a right-angled position, a security pole can be positioned and locked off to the handrail. This will be used at the end of each day for security purposes. The mooring of the pontoon will be carried out using deadweights and chains connected to the pontoon.

The works will be completed using an EZ Dock work platform with moon pool. A 1 tonne A-frame will be constructed and attached to the platform using 5 tonne ratchet straps. The telehandler will lift the deadweights from the bed of the lorry and into the water. The block and tackle on the work platform will pick up the deadweights and chain. The safety boat will be strapped to the pontoon and will be used to manoeuvre the work platform to the various locations. Once in location a sacrificial line will be cut to allow the deadweight to drop to the sea bed. Staff will then take up the slack on the chain and connect the pontoon using shackles.

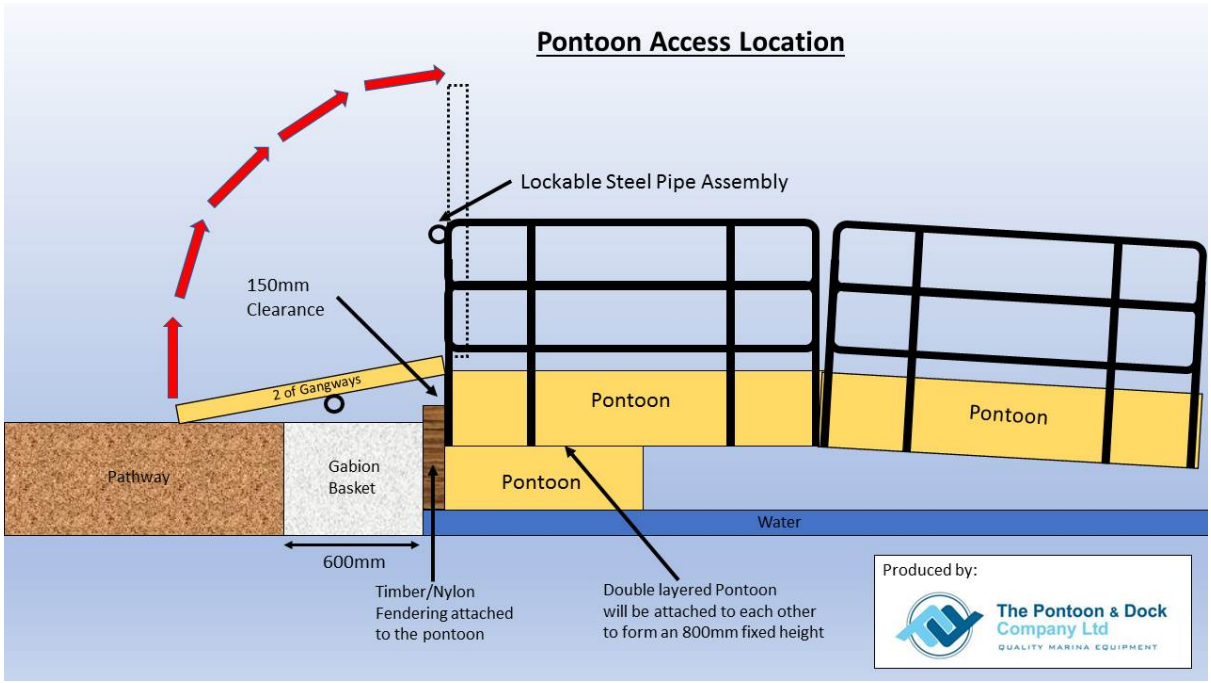

Figure 7: Gangway over gabion baskets to access the pontoon.

3.4. Management measures/mitigation

The works will be programmed over a 2-day period, with works being conducted throughout the day time working shift. There will not be any night working and works will be stopped if water flow increases or rises due to weather.

The site supervisor will brief the site team in a pre-start briefing session and carry out any relevant toolbox talk. The pre-start briefing will cover Health and Safety control measures, as defined in the Works Method Statement and Risk Assessments. Control measures will be detailed in the work package instructions issued to the site team. All operatives will be required to confirm receipt of the briefing as well as the main contractor's site induction.

Relevant management measures will include:

- Keeping public away from working area at all times;
- Ensuring life rings and spill kits are on hand at all times;
- Ensuring all staff wear life jackets whilst on site at all times;
- Using head lights in low light areas;
- All generators and welders will be sited in 'plant nappies' (secondary containment catchment tray for leaks and spills from equipment on construction sites) when in use;
- All re-fuelling will take place on land within a spill bund, with a spill kit present; and
- There will be no lone working at any time.

There will be two first aiders with water safety training on site. In the case of a rescue procedure, a safety boat with life ring and throw lines will be on site and available at all times. The trained operatives will assess the situation and make calls to emergency services if necessary.

All waste materials will be regularly collected during the course of the works, at least at the end of each working day, and removed to skips which will be removed for recycling or appropriate landfill by licenced waste carriers. The site will be secured at night, all hazardous substances and materials will be securely locked away in containers or removed.

No noisy works are required. However, if it is later determined that there is a requirement to operate any machinery which may generate noise in excess of a daily exposure of 80 dB(A) or a peak sound pressure of 200 Pa (140 dB), a written assessment shall be produced. It will detail all possible actions needed to reduce the exposure to noise to a safe level both for employees, residents and any ecological receptors (if relevant). The location and operation of all noisy work will be sited so as to minimise the effect on any publically occupied premises.

The staff the will be used to install the pontoon have the following training:

- Construction Skills Certification Scheme (CSCS);
- First Aid;
- Water Awareness;
- Power Boat 1 & 2;
- Prefabricated Access Suppliers' & Manufacturers' Association Ltd (PASMA); and
- International Powered Access Federation (IPAF).

4. Inflatables

4.1. Size of inflatables

The inflatables are comprised of obstacles of varying sizes and dimensions. An example of the inflatables at Aqua Park Rutland is indicated in Figure 8. The specific layout of the inflatables for Aqua Park Cardiff is shown in Figure 9. A copy of this figure is also provided as a supporting document with the Marine Licence Application (Supporting Figure 3). The longest section covered by these inflatables is 54 m in one direction and 38.5 m in the other direction.

Figure 8: Example of inflatables from a different Aqua Park site.

4.2. Transport to site

The inflatables will arrive as small, individual packages and will be delivered by courier or using a company that will deliver the inflatables on pallet beds. All items will be moveable by hand. Delivery is usually made 2-3 days before inflation and installation of the inflatables to factor in time for delivery delays.

The working area will be cordoned off for the duration of the works.

4.3. Placement

Each inflatable will be inflated at, or as close as possible to, the waters edge, and then lifted by hand into the water. Once floating, the inflatables will be immediately taken to their location to be anchored. The first few pieces will be towed by boat to their location and for the smaller pieces it is expected that they will be pulled into position via rope, not needing the boat (once a portion of the park has been installed to stand on). The inflatables will be tied to the anchors: each inflatable will have on average four D-rings (each load tested), that will be tied to the anchors with 12 mm Polysteel Line (also load tested).

The next inflatable will only be inflated after the previous one has been anchored. This will reduce the amount of time that any piece is unsecured. Larger items will be secured down with guide ropes on land during inflation. Each inflatable will be manned by at least one or two staff, so that no inflatable is left unsecured at any time.

4.4. Management measures/mitigation

Inflation and installation activities will only be undertaken in calm wind conditions. If winds are consistently 15 knots or more, or gusts are forecast above 20 knots, all inflation work would cease until conditions improve. Work will be cancelled 24-48 hours in advance if the forecast is poor. Work will be stopped and all items immediately secured should the weather deteriorate.

Delivery of the inflatables will result in large volumes of cardboard waste. Additional recycling bins will be provided by the Harbour Master to take this waste.

The staff used to install the inflatables will have the following training:

- First Aid; and
- Power Boat Level 2 or higher.

Throughout the installation of all aspects of the water park, Aqua Park staff will be present that have the following training:

- First Aid at work;
- Royal Life Saving Society (RLSS) Open Water;
- National Pool Lifeguard Qualification (NPLQ) Lifeguarding Qualification;
- RLSS Lifeguard Trainer assessor;
- Power Boat Level 2; and
- Institution of Occupational Safety and Health (IOSH).

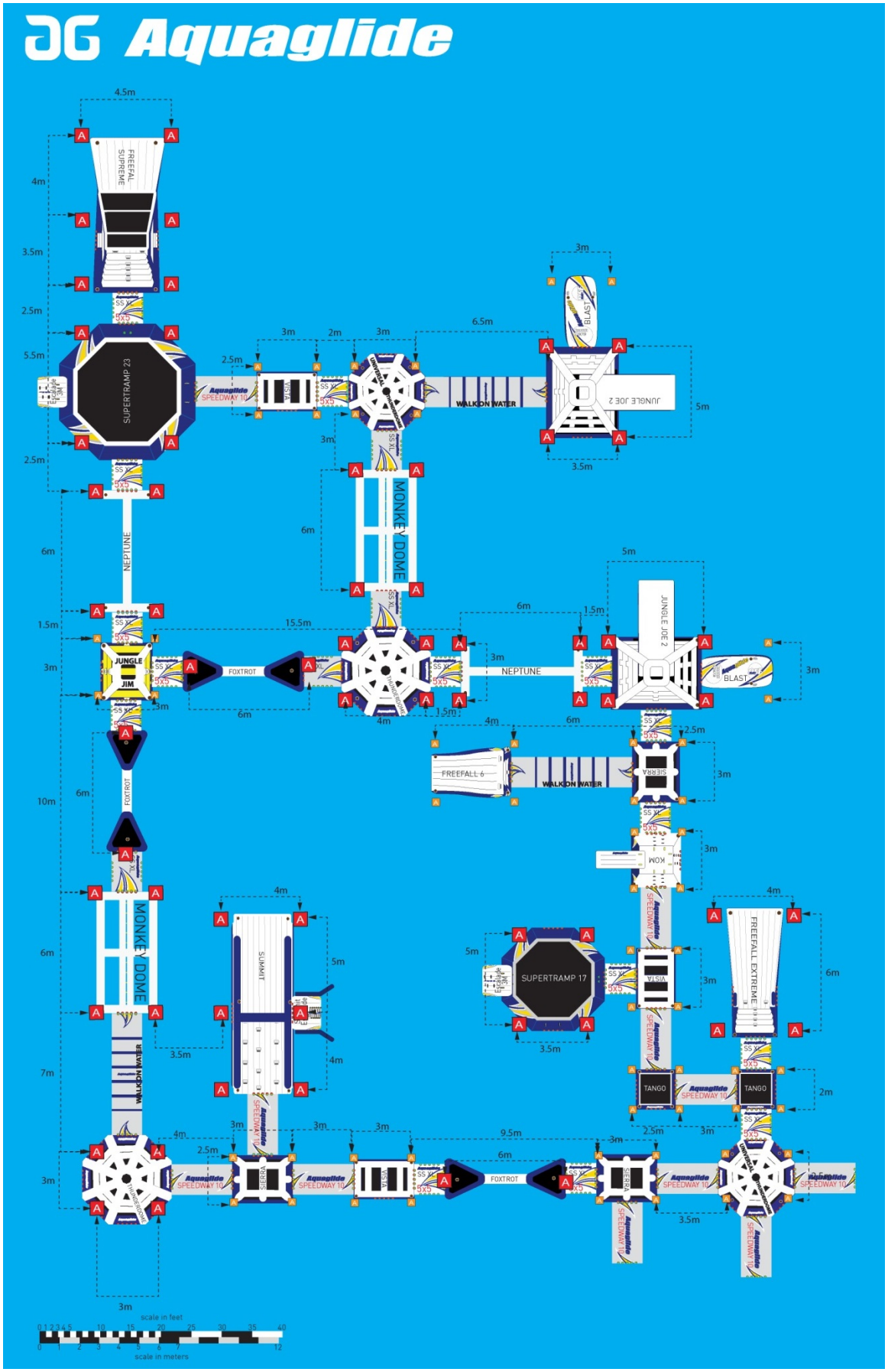

Figure 9: Proposed layout of Inflatables at Aqua Park Cardiff with anchor points shown as red and orange squares.