



PTSG Wave Garden – Edinburgh



An artists impression of what the site will look when complete and in full operation.

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Beyond the Surface: Engineering Safety for Scotland's Ground breaking Wave Garden

Wave Garden Edinburgh represents one of Scotland's most innovative leisure developments - an inland surfing lagoon designed to create perfect artificial waves for surfers of all abilities. This pioneering facility required specialised infrastructure to support its unique water-based attractions, including comprehensive power distribution systems and multiple substations. With thousands of visitors expected annually, many of who would be in direct contact with water while surfing, the earthing requirements presented exceptional technical challenges that demanded expertise beyond standard electrical installations.

The project developers initially reached out to PTSG's Power Earthing division because of our reputation for handling complex earthing designs in challenging environments. Recognising the unique safety considerations of an electrical system in close proximity to recreational water features, they sought a partner with both the technical expertise to design a compliant system and the practical experience to implement it effectively.

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The Challenge

The Wave Garden Edinburgh project presented unique earthing design challenges due to its specialised nature as a surfing facility. The site required a comprehensive earthing system that would:

- Protect surfers and visitors in and around water features
- Manage an extensive 11kV substation HV network across multiple substations
- Meet stringent safety requirements with touch and step potential voltages below 25V (IEC 61936-1)
- Ensure proper integration with the 33/11kV primary substation

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Our Solution

Our team conducted a thorough assessment of the site's unique requirements:

1. **Comprehensive Site Survey:** Our design engineers spent a full day conducting detailed soil resistivity surveys at each substation location to gather precise data for the design phase.
2. **Innovative Design Solution:** Rather than implementing a standard substation design, we developed a customised approach that utilised the rebar within the wave pool (cove) structure as part of the earthing system. This innovative solution mitigated potential risks to surfers in the event of an earth fault.
3. **Expanded Project Scope:** Based on the quality of our initial work, we were recommended to the Independent Distribution Network Operator (IDNO) to design the Earth Electrode System for the 33/11kV Primary substation.
4. **Complete Turnkey Implementation:** Our services expanded to include the installation of the entire site earth electrode system, including testing and commissioning, providing end-to-end project delivery.

Results and Benefits

- **Enhanced Safety:** The implemented system ensured touch and step potentials remained below 25V, creating a safe environment for surfers and visitors even in the event of an earth fault.
- **Regulatory Compliance:** The solution met all requirements under IEC 61936-1 and relevant British Standards.
- **Client Satisfaction:** Our expertise led to expanded project scope through client recommendation.
- **Turnkey Delivery:** We successfully delivered a complete solution from initial design through installation and commissioning.

Ready to Ensure Your Power Earthing Compliance?

Whether you require a customised design for unique environments or need urgent assistance with compliance issues, our team has the technical knowledge and practical experience to protect your people, property, and reputation.



Take the Next Step Today:

- **Request a Site Survey:** Our technical specialists can assess your current earthing systems and identify any compliance issues or areas for improvement.
- **Schedule Your Compliance Testing:** Ensure your organisation meets all legal requirements under The Electricity at Work Regulations 1989.
- **Discuss Your Upcoming Project:** Let us help you design and implement the most effective earthing solution for your specific needs.

Contact our Power Earthing team today:

- Call: 0115 9758 835
- Email: power-earthing@ptsg.co.uk
- Visit: www.ptsg.co.uk/power-earthing

Power Earthing Solutions: Technical expertise you can rely on, peace of mind you can count on.