

## Company Profile



**Bauer Technologies** is the UK contracting arm of the Bauer Group. We perform deep foundation works on major projects in the UK. We specialise in the design and installation of large diameter piles, diaphragm walls, under-ream piles and in-situ piled retaining walls.

### Core Competencies

- Large Diameter Rotary Bored Piles
- Secant Pile Walls
- Diaphragm Walls
- Under-reamed Piles
- CFA Piles
- Pile Removal

The Bauer name is synonymous the world over with the highest standards in foundation engineering. By concentrating on our core competencies we are able to ensure we maintain these high standards in the UK. We specialise in major projects, with values in excess of £500K, and technically complex projects.

All our piling and diaphragm walling equipment is manufactured by Bauer. This equipment is particularly suited to dealing with hard strata, including the removal of reinforced concrete obstructions where these obstruct the position of a proposed foundation.

As a wholly owned subsidiary of the Bauer Group we are fully supported by the technical departments of our parent company Bauer Spezialtiefbau (BST) in Germany, allowing access to additional rigs and specialist resources, as well as enabling us to benefit from the latest innovations from BST's ongoing Research and Development. By maintaining close links with our worldwide network we are able to draw upon the full depth of BST's experience and engineering knowledge to develop the most innovative and cost-effective solution to our client's foundation problems.

## 1 A19 / A1058

Bauer Technologies was awarded the piling contract for the A19/A1058 Junction Improvement project in Newcastle, by Sisk Lagan JV, the Main Contractor responsible, on behalf of Highways England. The £75m scheme involves upgrading the existing roundabout to a 3-level interchange.

Bauer's scope of works was to install 583no contiguous rotary bored piles with diameters ranging from 600mm to 1500mm. The piles, which were up to 31m long, were founded in sandstone bedrock to form contiguous pile walls, creating the trough for the A19 'dive under'. A number of the retaining wall piles also act as hybrid design elements by carrying the load of three major single span bridges across the underpass.

The project was incredibly challenging and involved Bauer working within a live, major roundabout with a heavy volume of traffic. In order to manage the associated risks efficiently, Bauer worked closely with SLJV and Highways England in order to implement stringent health and safety processes. In addition, Bauer participated in Highways England's "Raising the Bar" scheme which is designed to raise standards in Efficiency, Quality and Health & Safety.

Piling works started in December 2016, with mobilisation of a Bauer BG30 rig, which was followed by a second machine in early 2017. Piling works were carried out in two phases, both phases being completed on time and on budget.



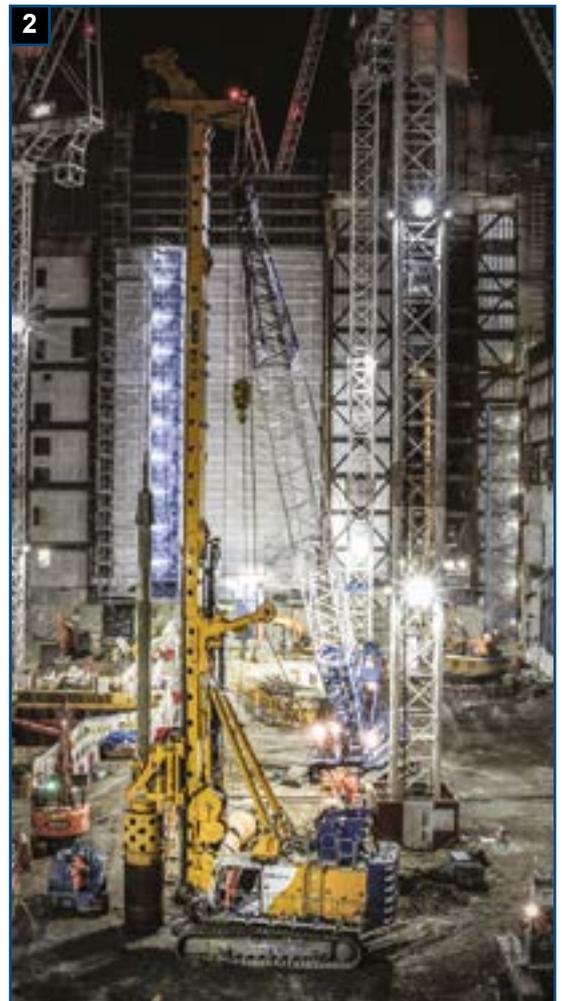
## 2 Battersea Power Station

Bauer Technologies was awarded the £30m piling contractor for Phase 2, working directly for the Battersea Power Station Development Corporation (BPSDC) to design and construct the rotary bored piling within the envelope of the existing 1930's Power Station building.

Bauer's scope of works included the design of permanent and temporary works piled foundations; 500no 880 and 1180mm diameter secant piles in two secant walls; 125no contiguous wall piles; 400no bearing piles (750mm to 2400mm diameter between 35m and 65m deep) and 80no temporary piles for temporary works structures and tower cranes.

Prior to constructing the main works piles, substantial existing traditional concrete foundations and piles were removed at new pile locations using specialist piling equipment.

The successful delivery of the piling works overcame challenges that included the presence of existing foundations (including piles), headroom and space constraints, strict building movement tolerances, asbestos contamination, scour features in the London Clay, logistics management and coordinating work with both enabling and follow on contractors.



### 3 Principal Place, Shoreditch, London, UK

Bauer Technologies was awarded the £4.86m foundations contract for Principal Tower, a 50-storey luxury residential establishment in Central London, by Multiplex Construction Europe on behalf of its Client, a joint venture between Brookfield Office Properties and Concord Pacific.

Specifically, Bauer was appointed to install the piled foundations and secant walls for the Principal Tower, which was particularly challenging, as Bauer was required to work under restricted space conditions, next to a live railway, around strict load restriction zones and in amongst other trades on site. Some 81no, 1500mm bored piles, up to 55m deep were installed, including 8no permanent casings with bitumen slip coating, 14no. large section plunge columns, and 10no king posts. 32no 880mm bearing piles, up to 33m deep, were also installed as well as 214no 880mm secant wall piles (150 linear metres), up to 33m deep including 24no king posts.

Bauer was able to draw on its specialist foundations contractor knowledge to carry out project-specific plant modifications, which allowed a BG40 piling rig to install heavy duty pile casings of up to 2000mm diameter, whilst standing on sensitive temporary works structures with strict load restrictions.

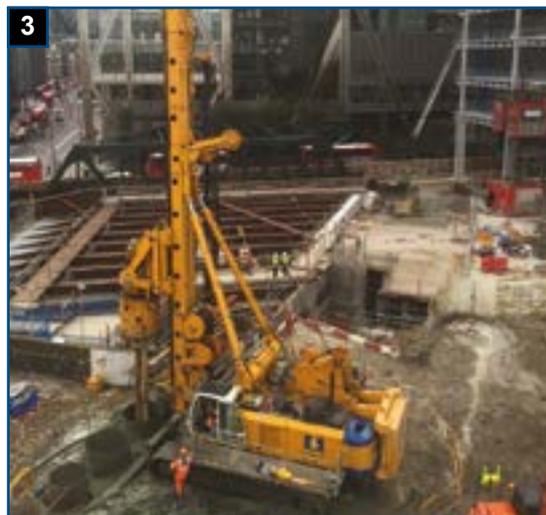
In the second phase of the works, Bauer used a 350-tonne mobile crane to safely lift its BG30 piling rig into the partially excavated secant wall box. This allowed the remaining bearing piles to be installed after successful completion of archaeological excavation works by the Museum of London.

### 4 Eastern Bay Link Flyover, Cardiff

The £57.3m Eastern Bay Flyover is a critical component of the Cardiff Eastern Bay Link (EBL), funded and managed by the Welsh Government, with Dawnus Ferroviai Agroman Joint Venture (DFAJV), the Main Contractor, awarding the piling contract to Bauer Technologies Ltd.

Bauer Technologies commenced piling works in March 2016, installing 252no, 1200mm rotary bored piles with depths up to 32m, using Bauer's own BG30 and BG39 piling rigs. Casing vibrators were used to place and extract single wall casings up to 17m long. Notably, Bauer also successfully carried out three pile maintained load tests using Osterberg cells.

The £2m project presented many challenges; work had to be undertaken adjacent to a live railway line and without striking any of the numerous live services in the piling area. The risk assessments Bauer implemented, and the associated mitigation measures allowed the piling team to install all piles without interruption to rail traffic, which was an incredibly important aspect of the project. Bauer's performance resulted in the early handover of completed pile groups.



## 5 M8/M73/M74 Improvements - Structure 105 - Braehead Railway Bridge, Scotland

Bauer Technologies was awarded a £3.5m sub-contract by Ferrovial Lagan JV (FLJV) to install the foundation piles for a number of structures along the new motorway, including the 8no. 2.0m diameter foundation piles for the Braehead Railway Bridge.

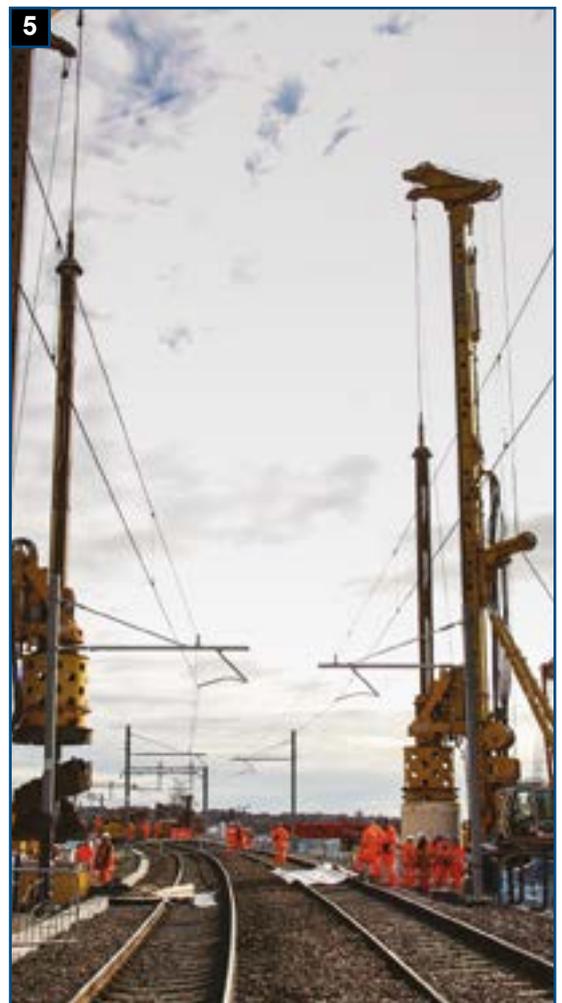
A challenging project, as it had to be planned in great detail and in close cooperation with main contractor Ferrovial Lagan JV and Network Rail to ensure minimum disruption to rail services. As a result the 2.0m piles had to be constructed within 4 x 54-hour railway possessions (closures) in April 2015.

A key element in assuring reliable delivery was to verify the design assumptions and the construction method. This was demonstrated by construction of a sacrificial test pile of the same diameter as the works piles, fitted with a 660mm diameter Osterberg Cell. The design test load for the pile was 28.7 MN but it was finally tested to failure, achieving a maximum sustained gross bi-directional applied load of 39.5 MN.

Directly after the successful test piling the 8no. 2m diameter rotary bored piles up to 18.7m deep were installed. The first 54hr possession was scheduled for the Easter weekend. At their closest the piles were within 2m of the nearest rail and 1m away from an OHLE stanchion. The piles were drilled by BG40 drilling rigs resourced from Bauer resources in UK and Europe. The piles were temporarily cased with Bauer segmental casing through the upper overburden and made ground strata, which consisted of silty/sandy firm to very stiff clay (glacial till). The segmental casing was then sealed into the underlying sandstone and siltstone rock. Using Bauer rock augers and drilling buckets, the pile bore was drilled through sandstone, siltstone and mudstone with rock strengths of up to 50Mpa.

Piles were heavily reinforced full length with a double layer of B50 reinforcement (a steel density of nearly 800kg/linear m). The line of piles constructed in closest proximity to the railway tracks had a permanent steel liner installed over the upper section, in the zone above the concrete cut-off level, to allow safe access for follow on contractors to trim the piles. The permanent liner was attached to the reinforcement cage using a bespoke fabricated bracket-splice connection developed by the project engineering team.

Bauer Technologies added value to the project by using its experience of previous work on similar technically demanding projects carried out in a rail environment. This experience was fundamental in Bauer Technologies installing the 8no. piles for Structure S105 in less than 50% of the allowed construction time: only 2 of the 4, 54-hour possessions were required to complete the work.



## 6 Manufacturing Facility, Bradford

Bauer Technologies tendered and successfully negotiated a subcontract to deliver the foundation work for the project, working for JN Bentley, on behalf of the main client, BASF. Bauer Technologies mobilised to carry out the work in February 2015. As the work was required to be undertaken while the chemical plant was in operation, the project was not without its challenges. Specifically Bauer Technologies had to install a number of rotary bored piles in close proximity to BASF's existing chemical storage tanks, which carried inherent risk as well as influencing construction sequence.

On-site, Bauer Technologies had to react quickly and professionally to changed ground conditions by modifying the envisaged construction method and then optimising performance under the revised constraints. For example, mine workings within the bedrock were encountered, requiring temporary casings to be lengthened from 6m to 15m. By working closely and co-operatively with JN Bentley the disruption and delay to the programme was minimised. Work was completed in early March 2015.

Bauer Technologies used its BG30 and BG40 rigs to drill 880mm diameter piles, with rock sockets up to 25m long in Coal Measure Sandstones, Siltstones and Mudstones.

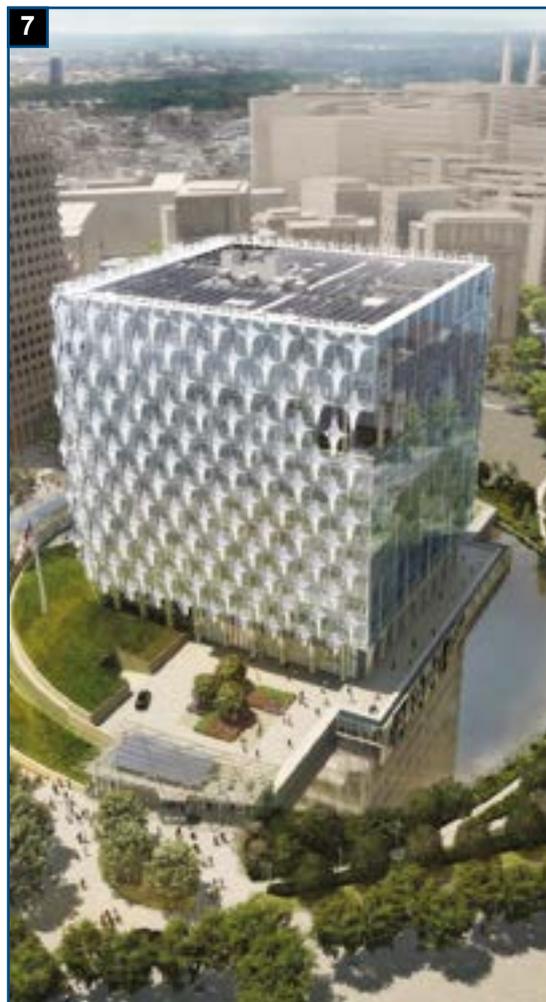


## 7 US Embassy, London

Bauer Technologies was awarded the contract to undertake the piling and diaphragm walling works for the new US Embassy in London. The US Department of State Bureau of Overseas Buildings Operations (OBO) Construction Contractor, BL Harbert, and Prime Sub-Contractor, Sir Robert McAlpine, selected Bauer Technologies for the early site work. The project commenced in June 2013, ahead of the main works in August 2013.

Bauer's work consisted of the construction of a diaphragm wall and deep base-grouted piles and despite the complex and large-scale nature of the project, the work was completed within an extremely tight 3-month schedule.

Bauer mobilised a number of rigs, including 2no. BG40s; 2no. BG28s and 2no. diaphragm wall grabs.



## 8 Acton Dive Under, London

Bauer Technologies secured the contract for the piling works for the £30m Network Rail (on behalf of Crossrail) Acton Dive Under project in West London. The £4m project awarded by main contractor BAM Nuttall, involved Bauer Technologies installing 950Inm of secant and contiguous pile walls, consisting of 1400no CFA piles in diameters of 600mm, 750mm and 900mm. The piles up to 16m deep, were installed between live railway lines using a CFA adapted Bauer BG28 drilling rig.



## 9 Whitechapel Station - Cambridge Heath and Durward Street Shafts - Crossrail Advanced Station Works

Bauer Technologies completed Crossrail Advance Works Contract C511 at Whitechapel Station, London in May 2013. The scope of works included the construction of a circular diaphragm wall shaft at Cambridge Heath and a more regular shaped diaphragm wall box at Durwood Street. The main contractor for the project was the BAM Nuttall Kier Joint Venture. Both sites had extremely challenging working constraints. Other works included pile probing and pile removal.



## 10 Liverpool Street Station - Moorgate Shaft - Crossrail Advanced Station Works

BAUER Technologies completed the Crossrail Advance Works Contract C501 at Moorgate, London in August 2013. The contract, for main contractor BAM Nuttall Kier Joint Venture, included extensive pile probing and pile removal, using the BAUER Technologies developed Annulus Cutter.

The main scope of the project consisted of the construction of 3No 2.4m diameter future over site development piles and the construction of a diaphragm wall box. Geothermal loops were also installed within the diaphragm wall panels. Working space within this extremely constrained site was a significant challenge to the project team for the duration of the works.



To view these projects in more detail please visit our website:  
[bauertech.co.uk/case-studies](http://bauertech.co.uk/case-studies)

### 11 Tottenham Court Road Station Upgrade, London

Bauer Technologies performed large diameter (2m+) piling down to below 65m depth; diaphragm walling 1m thick x 41m deep; 11nr plunged columns installed into large diameter 48.5m deep piles; piles of diameter 2.4m and various secant pile walls for main contractor Vinci BAM Nuttall Joint Venture. The client was London Underground.

The project presented Bauer Technologies with a number of challenges, including:

- Construction of a 2m diameter bearing pile with permanent liner in a 'D Shape'.
- Design and installation of a new bespoke plunged column frame 23m long, equipped with laser guides which for the first time in the UK bears on "naked soil", rather than a steel casing clamping the frame in place. The plunge columns are by far the heaviest and longest that the industry has seen for some time, with a mixture of 600 x 600 and 700 x 700 columns up to 33m long installed.
- Installation of a diaphragm wall within a working area of 25m x 30m surrounded by London traffic.

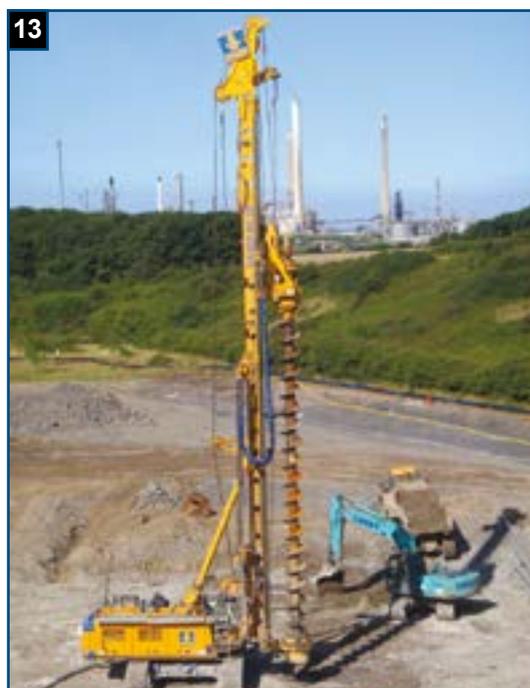
### 12 Pembroke Jetty, Pembroke

Bauer Technologies completed these extremely complex works on a 50 year old jetty on the Severn Estuary at the site of the new 2000MW, Combined Cycle Gas Turbine Power Station, to support the Leibherr LGD 1750 crane and its 387.5 tonne superlift required for the safe off-loading of five 400-tonne gas turbines as part of the stations' construction.

Bauer chose its rotary system for the job, using thick walled casing with tungsten carbide cutting teeth rotated to pile toe level using Bauer's powerful BG28 rig. For the marine piles, 1220mm diameter casing was fitted with Bauer cutting teeth to ensure penetration through the boulders. The works were undertaken 24hrs a day, 7 days a week to complete the piling and ensure the deadline was met; this was driven by the departure schedule of the ships delivering the gas turbines from Rotterdam.

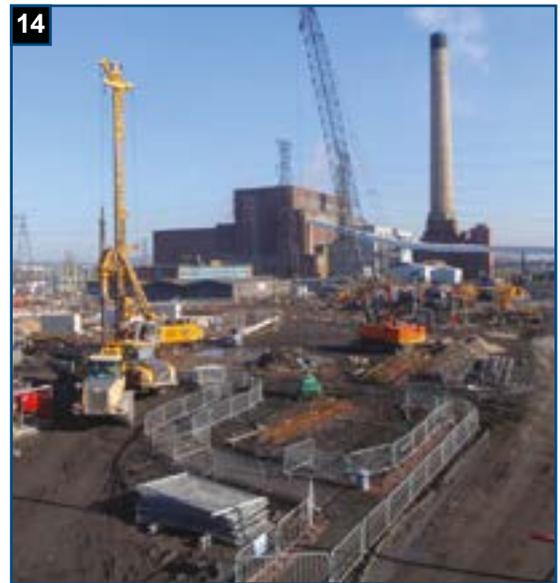
### 13 Pembroke Power Station, Pembroke

Bauer Technologies completed the £5 million contract for the installation of the piled foundations at Pembroke CCGT. Each unit consisted of a variety of sub-structures covering a total area of 40,000sqm. The scope of the piling contract comprised the construction of the piling platform; preliminary trial bores to verify ground conditions and rock head level in the piling area; a preliminary pile testing regime including a fully instrumented test pile; construction of 2,307no. 600mm reinforced CFA piles; 421nr 900mm unreinforced CFA piles and installation of 10nr 1200mm diameter steel liners to 10m depth at the condensate pit, including all associated piling attendances (setting out, provision of attendant plant, spoil disposal, platform maintenance).



## 14 Severn Power CCGT, Newport

Bauer Technologies was awarded the £15 million contract for the piled foundations of the new Power Station, which consisted of two power generating units, each a variety of structures covering an area of 60,000sqm. The scope of the piling contract involved the construction of the piling platform; a preliminary pile testing regime; the erection of an on-site concrete batching plant; the installation of the piled foundations, comprising 439nr 620mm diameter bored piles; 426nr 880mm diameter bored piles and 711nr driven cast iron ductile piles.



## 15 Waste to Energy Facility, Newhaven

Bauer Technologies executed a circular shaped diaphragm wall and foundation barrettes for the facility in Newhaven for Hochtief UK. Different options and alternative technical solutions were proposed and offered during the tendering phase, before Hochtief, in joint venture with vonRoll (Switzerland), awarded the project to Bauer Technologies Ltd.



## 16 Palm Paper Project, Kings Lynn

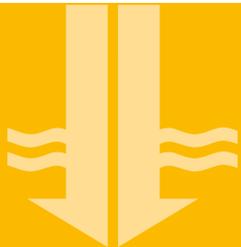
Bauer Technologies was successful in winning the contract for the piled foundations of Europe's largest paper machine. The scope of the project was to install a secant pile wall (hard/hard) and foundation piles to support the machine hall area to a design developed by BHM INGENIEURE Engineering & Consulting GmbH. The final value of the works performed by Bauer was £4.4 million.



## Mission Statement

To provide a healthy and safe environment to deliver the highest quality product and service to our clients in all areas of our business. To allow our clients to benefit from our position as a global leader in the deep foundation industry, by utilising our vast experience to gain value engineered solutions on the largest and most complex projects, whilst maintaining the highest levels of professionalism, integrity and honesty in all our business relationships.

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