



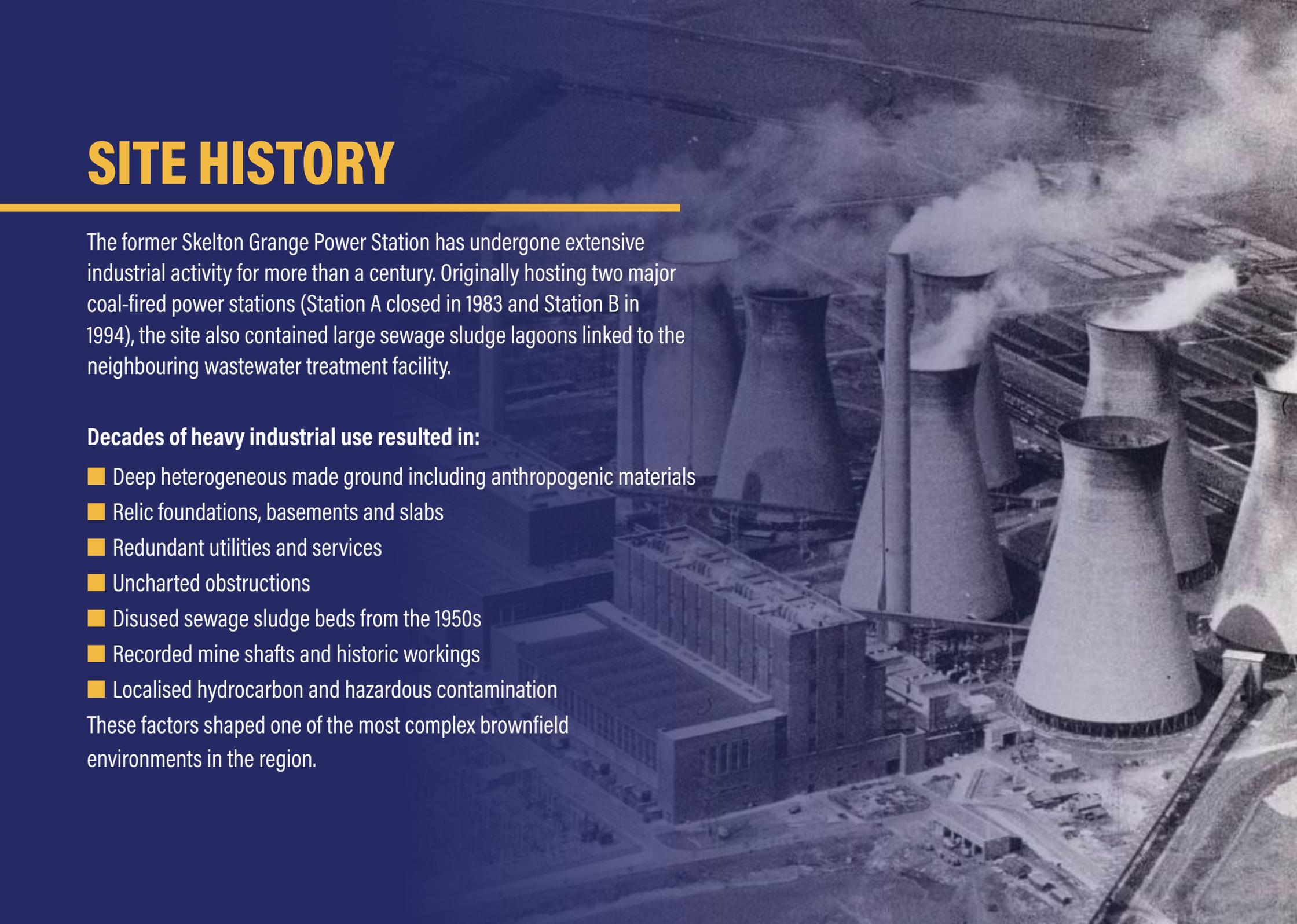
HOWARD
CIVIL ENGINEERING

SKELTON GRANGE

MAJOR EARTHWORKS, REMEDIATION
& INFRASTRUCTURE DELIVERY



SITE HISTORY

An aerial photograph of a large industrial power station. Several tall, conical cooling towers are visible, each emitting a thick plume of white steam that rises into the air. The towers are arranged in a cluster. In the foreground and middle ground, there are various industrial buildings, pipes, and infrastructure. The overall scene is a complex of heavy industrial structures.

The former Skelton Grange Power Station has undergone extensive industrial activity for more than a century. Originally hosting two major coal-fired power stations (Station A closed in 1983 and Station B in 1994), the site also contained large sewage sludge lagoons linked to the neighbouring wastewater treatment facility.

Decades of heavy industrial use resulted in:

- Deep heterogeneous made ground including anthropogenic materials
- Relic foundations, basements and slabs
- Redundant utilities and services
- Uncharted obstructions
- Disused sewage sludge beds from the 1950s
- Recorded mine shafts and historic workings
- Localised hydrocarbon and hazardous contamination

These factors shaped one of the most complex brownfield environments in the region.

PROJECT OVERVIEW

The site is undergoing a major transformation into Gateway 45, a large-scale industrial and logistics park that also accommodates energy and digital infrastructure. The development includes logistics and industrial units, a hyperscale data centre, an Energy from Waste (EfW) facility, a 99MW battery storage system, and a new Park and Ride facility for Leeds City Centre.

Green infrastructure forms an integral part of the scheme, with new tree and hedge planting alongside a segregated cycle and pedestrian route linking to the Trans Pennine Trail.

Working for our longstanding client Harworth Group, Howard Civil Engineering (HCE) was initially appointed as Principal Contractor to two contracts on the development: Skelton Infrastructure (£5m) and Skelton Earthworks & Remediation (£17m). Together, these works will prepare the site for future commercial development and deliver adoptable infrastructure to support the long-term success of the project.



OUR ROLE

The transformation of this 12-hectare brownfield site into a stable development platform required a fully integrated remediation, demolition, earthworks and infrastructure solution. HCE developed and delivered a suite of specialist enabling works including:

- Safe systems of work for deep excavations, contaminated land, hazardous materials, groundwater, and below-ground obstructions
- Full environmental and ecological management
- Heavy earthworks, material improvement and platform construction
- Management of large-scale temporary works around high-voltage utilities
- Multi-stakeholder coordination including Environment Agency, National Grid, Northern Powergrid, Yorkshire Water, Coal Authority, Canals & Rivers Trust and numerous landowners and adjacent operators

Early works included full site establishment, vegetation clearance, invasive species removal, and ecological protection measures. Detailed surveys mapped made ground, relic structures, sludge deposits, mine shafts and buried services, informing the site-wide risk strategy.





KEY COMPONENTS OF HCE'S DELIVERY

- Engineering solutions for demolition, drilling & grouting, deep obstructions, and geotechnical hazards
- Identification, testing and development of a cost-effective treatment plan for historic sewage sludge beds
- 12 m deep basement and turbine hall demolition inclusive of working below the water table and into the natural river terrace strata
- Continuous groundwater management, treatment and discharge under Environmental Agency permissions
- Processing and recycling of concrete to WRAP protocol
- Management of hazardous waste, asbestos and hydrocarbon-impacted soils
- Implementation of the Materials Management Plan (MMP)
- Extensive heavy earthworks including cut/fill, material segregation, stabilisation and platform formation

This highly integrated package demonstrates HCE's capability to safely deliver high-risk brownfield regeneration works.



Coordination and working around existing services

Uncharted obstructions across former industrial areas

A major turbine basement (approx. 130 m × 80m × 12 m deep) was demolished under water, with more than 100,000 m³ of reinforced concrete broken out and recycled.

Large below-ground relic structures up to 12 m deep

KEY SITE CHALLENGES & OUR SOLUTIONS

GROUND CONDITIONS & REMEDIATION

One of the most demanding elements was the demolition of a huge basement structure left from the power station. This work required specialist expertise and careful sequencing to manage both safety and environmental risk. Historic mine workings, coal seams, and shafts presented further subsurface uncertainty. Multiple geotechnical and environmental risks required bespoke remediation strategies:

- Deep made ground with unpredictable composition
- Large below-ground relic structures up to 12m deep
- Historic sludge beds requiring investigation, classification and treatment
- Two recorded mine shafts requiring stabilisation
- Uncharted obstructions across former industrial areas
- Contaminated pockets, including hydrocarbons and hazardous waste

HCE UNDERTOOK:

- Excavations up to 12m deep
- Turnover, improvement and replacement of unsuitable materials
- Drilling and grouting of mine workings
- Bulk removal of obsolete foundations, slabs and substructures
- Treatment, segregation and classification of all waste streams
- Carefully managed basement demolition

KEY SITE CHALLENGES & OUR SOLUTIONS

GROUND CONDITIONS & REMEDIATION

HCE carried out comprehensive drilling and grouting throughout the area affected by historic mine workings. This process was designed to stabilise the ground, reduce the risk of future settlement, and ensure the long-term integrity of the site for proposed development. By targeting known and potential voids beneath the surface, HCE effectively mitigated the legacy risks associated with former mining activity.

The drilling and grouting works addressed subsurface issues by:

- Investigating ground conditions to identify voids, weak strata, and abandoned mine features
- Drilling to designed depths to intercept mine workings, seams, and shafts
- Injecting specialist grout to fill voids, consolidate fractured ground, and improve load-bearing capacity
- Reducing the risk of ground movement, collapse, and differential settlement
- Providing a stable and safe foundation platform for future construction

HCE are also addressing ground stabilisation where two recorded mine shafts are located.



KEY SITE CHALLENGES & OUR SOLUTIONS

GROUND CONDITIONS & REMEDIATION



Treatment, segregation and classification of all waste streams

Excavation up to 12 m

Reuse and re-engineering of site won materials

The project involved extensive clearance of former industrial areas, with obstructions and redundant structures removed to enable safe and efficient progress. Recovered materials were processed on site and re-engineered for re-use where practicable, supporting sustainability and programme efficiency. All waste streams were treated, segregated, and classified in line with regulatory requirements.



Beneath the surface, relic structures extending to depths of up to 12 metres required deep excavation to remove legacy constraints and form stable ground conditions. Excavated materials were assessed and, where suitable, re-used following reprocessing, reducing off-site disposal and supporting a circular approach to material management.

KEY SITE CHALLENGES & OUR SOLUTIONS

WATER & ENVIRONMENTAL RISK MANAGEMENT



Complex groundwater management and treatment

Treatment, segregation and classification of all waste streams

Groundwater represented one of the project's most significant risks. HCE implemented a robust dewatering and environmental protection system that included:

- Continuous pumping, monitoring and control in compliance with Environmental Agency environmental permits and licences and the associated thresholds within these documents.
- Treatment and settlement processes prior to discharge
- Formation of temporary lagoons for controlled water management
- Zero environmental impact on surrounding watercourses

Over 100,000 m³ of groundwater was treated and discharged under active Environmental Agency permitting.

Additional environmental controls included:

- Hydrocarbon containment around former fuel areas
- Prevention of contamination migration via water table management
- Strict wildlife protection and ecological mitigation
- Asbestos identification, control and removal
- Invasive species management and eradication
- Treatment, segregation and classification of all waste streams

KEY SITE CHALLENGES & OUR SOLUTIONS



Coordination with neighbouring Enfinium site

UTILITIES, STAKEHOLDER ENGAGEMENT & TEMPORARY WORKS

The site sits adjacent to live, high-voltage National Grid and Northern Powergrid infrastructure.

To protect these assets, HCE delivered:

- Large-scale temporary works and exclusion zones
- Vacuum excavation around unknown services
- Installation of a new infrastructure system, comprising a bank of 16 ducts, to accommodate the diversion of 4No EHV NPG cable circuits.
- Real-time monitoring and phased construction sequencing
- Close coordination with neighbouring Enfinium site

Close and continuous liaison with statutory bodies enabled safe progress within a highly constrained live environment.

KEY SITE CHALLENGES & OUR SOLUTIONS

DRAINAGE, INFRASTRUCTURE & ROADWORKS



Infrastructure works included the reconstruction of Skelton Grange Road and installation of foul and surface water drainage systems. As a design and build scheme, the works were complicated by unknown ground conditions, existing services, and relic structures. Drainage designs have required large-scale redesigns due to clashes with existing utilities.



Enfinium site access

Temporary running lane

CHALLENGES ADDRESSED

- Initially assumed drainage outfall proved unsuitable
- Weeks of CCTV, jetting and investigation required
- Full redesign of the drainage strategy
- Live traffic management affecting multiple stakeholders
- Need to maintain uninterrupted access to Enfinium's operational EfW facility

HCE SOLUTIONS

- Construction of a temporary running lane to maintain traffic flow and access to Enfinium site
- Safe, isolated working corridor for the full upgrade works
- Full road reconstruction including: Drainage Rising mains, Kerbs, Footpaths & cycleways, Street lighting, Surfacing and lining

Future works include the Link Road, South Road, 8-m deep pumping station, and diversion of a 132 kV main.

[VIEW OUR DRONE FOOTAGE](#)

OUR PEOPLE

The delivery of Skelton Grange Major Earthworks, Remediation & Infrastructure has been led by a team of senior management offering exceptional expertise and experience in overseeing major complex schemes.



TOM BARRETT
Project Manager

Tom Barrett brings over 20 years of civils experience, working successfully as both a Sub-Contractor and Principal Contractor across roads, sewers, RC works, and wider infrastructure projects.

Known for his ability to programme, manage, and deliver works on time and within budget, Tom maintains the highest professional standards in every role.

Loyal, competent, and highly dependable, he is a key asset to any project team and consistently contributes to the smooth and efficient delivery of complex schemes.



TONY KILBANE
Contracts Manager

With an impressive CV including extensive earthworks experience in addition to delivery of complex highway schemes, Tony is the key person coordinating any design and delivery of pre-contract requirements and progressing the project to delivery on site.

With over 20 years' experience in construction, Tony is a highly respected and extremely competent member of our team delivering complex multi-phased Main Contractor Projects aided by his broad knowledge of the NEC Contract.



ANDREW RAFTON
SHEQ Manager

With extensive experience in delivering quality and safety on many schemes. Andrew is a certified IOSH member. He provides Health, Safety, Quality and Environmental support, assistance, and advice to all staff - especially the site management - and promotes the pursuit of excellence and improvement of HSQE throughout the company.

Our excellent HSQE record reflects Andrew's long-term commitment to continual improvement, raising awareness of Health, Safety and Environmental issues among directly employed staff as well as subcontracted employees across our sites.



SOCIALLY RESPONSIBLE RECRUITMENT

HCE's site team at Skelton Grange includes operatives who joined the company through our socially responsible recruitment policy which focuses on long-term skills development through a people-centric approach, empowering individuals and building highly skilled teams capable of delivering complex, high-risk infrastructure safely and efficiently. Foundations for Life, HCE's social value programme, exemplifies this commitment by providing life-changing employment opportunities, practical on-site experience, and tailored support to individuals facing significant barriers to work.

- Local recruitment and support: Engaging and supporting individuals overcoming homelessness, addiction, post-prison rehabilitation, and other challenges.
- Working with specialist partners (including the Howarth Foundation) to provide structured guidance, pastoral care, and practical work experience to help participants gain skills, confidence, and long-term employment.
- Apprenticeship and training programme: structured upskilling across civil engineering disciplines, including drainage, waterproofing, banksman duties, and site operations.
- Internal reward, recognition and progression pathways supporting ongoing career development and progression within HCE.
- Sustainability and carbon-reduction training embedding environmental awareness and responsibility in all team members.

OUR QUALITY APPROACH



Skelton Grange benefits from HCE's "right first time" culture which is embedded through:

- A dedicated Quality Assurance Manager from pre-construction to handover
- Real-time digital records using FieldView
- Detailed Inspection & Test Plans (ITPs)
- Strategic Quality Procedures for repeatable or high-risk activities
- Regular quality audits and governance
- GPS-controlled plant for precision earthworks
- Structured handover processes to reduce defects

This modern fleet improves safety, precision and productivity across the project.



PLANT & EQUIPMENT

The complex work at Skelton Grange required advanced plant supplied via Howard Plant Hire. Key plant investments include:

- Four new Liebherr TA230 Stage 5 ADTs, providing low emissions, increased ground clearance, advanced filtration, improved visibility and high-efficiency drivetrains
- A fleet of Liebherr excavators used for deep basement demolition and bulk earthworks
- Specialist dewatering, treatment and monitoring equipment
- Vacuum excavation and utility-safe digging systems
- Komatsu D71 D71 GPS controlled dozers providing powerful, versatile earthmoving performance.
- This modern fleet improves safety, precision and productivity across the project.